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A REPORT ON THE HEALTH OF BRITISH COLUMBIANS

1999

Provincial Health Officer's Annual Report

British Columbia
Ministry of Health

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Ministry of Health and
Ministry Responsible for Seniors
Victoria, B.C.

October 6, 2000

The Honourable Michael Farnworth
Minister of Health and
Ministry Responsible for Seniors

Sir:

I have the honour of submitting the Provincial Health Officer's Annual Report for 1999.

P.R.W. (Perry) Kendall
MBBS, MSc, FRCPC
Provincial Health Officer

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Message from the Advisory Committee on Health Goals for British Columbia

We are pleased to introduce the **Provincial Health Officer's Annual Report 1999**. This is the first report on progress towards achieving British Columbia's six health goals, which were established in 1998.

Because the goals are very broad, you will find that this report covers a wide range of topics. Ninety-three indicators of health are presented. Even though this is a fairly thick report, it has not been possible to cover any one topic or indicator in great depth. However, this year's report represents a starting point for reporting on the health goals. It sets out the framework for future reports, which will take a more in-depth look at specific goals, objectives, or topics.

As the Advisory Committee on Health Goals, one of our tasks is to recommend strategies and broad policy directions for the achievement of the goals. We have met and discussed the findings in this year's report. In our view, there are four priority actions that need to be taken to improve the health of British Columbians:

1. **Protect and improve social programs and tax policies that serve to mitigate against growing inequalities in income.**
   Measures of population health (in British Columbia and elsewhere) assessed against a population's socioeconomic status show a clear gradient. Those at the lower end of the scale are the least healthy. Health improves at each step up the income and social hierarchy. Policies that reduce the gradient will result in improved health status – overall and for each cohort.

2. **Make high-quality child care and other early childhood supports and services accessible to all children, without financial barriers. Provide targeted programs for children living in disadvantaged families and neighbourhoods.**
   This must be a priority for government action. Research clearly shows that the time from before birth through age 5 is a critical window of opportunity for helping children develop the competence and coping skills they need in order to lead long, healthy, and productive lives. It takes more effort and resources to overcome developmental problems than to prevent them by investing during these early years. A commitment to improving the population's health starts with a commitment to children.

3 **Reform the way in which primary health care services are provided.**
Primary care is the care that takes place at the first point of contact with the health system – usually in doctors' offices or health clinics. The way our primary care system is presently configured is inefficient and inappropriate to the health needs of today's population. Major gains in provider and patient satisfaction and quality of life, as well as more effective use of health care dollars, can be expected if we change the way in which primary care is organized and funded.

4 **Pay more attention to addictions and mental health as major public health problems.**
A "burden of illness" approach reveals the otherwise hidden burden caused by mental illnesses and substance abuse. Appropriate resources need to be allocated to proven, cost-effective strategies that can reduce the harms and the increasing health care and social costs caused by these two problems.

The health goals provide a focus for the province – a focus not just for government or for the Ministry of Health, but for all people who live and work in British Columbia. Taking action on the above priorities will require a coordinated effort involving all levels of government, non-government organizations, and the citizens they represent.

In the coming year, we will continue to work with the Provincial Health Officer to promote and monitor the health goals. We hope you will find this document thought-provoking and useful. We welcome your questions, suggestions, and continued dialogue as to how the goals can be used to achieve health for all British Columbians.

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Ron Dumouchelle
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Highlights

This year's report provides an update on progress toward achieving British Columbia's health goals, which were officially adopted by the province in 1997. The report also lays out the framework and the set of 93 indicators currently being used by the Provincial Health Officer to monitor the health of the population.

Overall Trends

There are some notable areas of progress. Of the 93 indicators presented, almost half (42) show an improving trend. On traditional measures such as infant mortality and life expectancy, British Columbia continues to make remarkable progress, and we remain among the best in the world. Education levels and employment – key factors that affect health – are also showing improvement. The number of people on income assistance has been declining steadily since 1995. Crime rates have declined, more people are volunteering in their communities, fewer teenaged women are becoming pregnant, and more of us are adopting safe practices such as bicycle helmet use. The health care system has taken concrete steps towards ensuring that people receive the care they need and in the most appropriate setting, whether that be in the home, out-patient clinic, hospital, or residential facility. Fewer people are exposed to second-hand smoke, fewer are dying from heart disease and injuries, and the elimination of measles and gonorrhea appears to be in sight.

On the other hand, the data show some aspects of health where results are less encouraging. Thirty-nine indicators have not shown much, if any, improvement, and six are worsening. Many families show signs of distress, as measured by increasing rates of reported child abuse, the number of children and youth in care, and reported episodes of regular heavy drinking. Diabetes, asthma, and allergies are becoming more common, based on self-reported data. The health care system is struggling to adapt to the population's changing health needs and to financial pressures. Our increasing use of gasoline and diesel-powered vehicles and other human activities are damaging the global atmosphere, and this threatens the health of future generations. Other major problems persist. These include levels of physical inactivity, being overweight, the rate of low birthweight babies, the number of illicit drug overdose deaths, and the incidence and prevalence of mental illness.

Regional Differences

Health status varies across British Columbia, with higher levels of health being found in the southern part of the province. Overall, North Shore has the best ranking on the indicators presented in this report, and Richmond ranks number two.

Northern regions of the province have the poorest health, based on the measures available. However, the gap between northern and southern regions has been narrowing. Improvements in infant mortality and life expectancy are being made faster in the Cariboo, North West, and Northern Interior than in other parts of the province, so that rates are beginning to converge.

Progress Toward British Columbia's Health Goals

Health Status

Indicator	Trend
Well-being	
Self-rated health	*Not much change*
Positive mental health	*Trend not available*
General health and function	
Functional health	*Not much change*
Activity limitation	*Improving*
Disability-days	*Not much change*
Health conditions	
Overweight	*Not much change*
Chronic conditions - Arthritis, high blood pressure, heart disease	*Improving*
Chronic conditions - Diabetes, asthma, allergies	*Worsening*
Chronic pain	*Not much change*
Mental illness	*Not much change*
Deaths	
Infant mortality	*Improving*
Potential Years of Life Lost	*Improving*
Life expectancy	*Improving*

A region's health status is related to its performance on the many factors that influence health. As shown in this and previous reports by the Provincial Health Officer, regions with the highest levels of education have the lowest levels of poverty, the least unemployment, and the highest rates of healthy behaviours. People who are advantaged with respect to these factors – which tend to go together and interact to improve the ability to deal with stress – are more resistant to diseases, injuries, and other threats to health.

Although north-south differences generally apply, each region has strengths and weaknesses on specific indicators of health. Thompson and Richmond consistently have the highest childhood immunization rates, West Kootenay has the lowest crime rates, and Burnaby has the lowest rates for cesarean deliveries and unnecessary hospitalizations (based on hospital-days for conditions that experts say "may not require hospitalization"). By examining comparative data, regions can learn from each other as to what is achievable in the various dimensions of health.

The regional results presented in this report are far from comprehensive. They also mask significant sub-regional differences, such as differences within the city of Vancouver, which has a large and diverse population. To make sense of regional results – and to make the data matter – local interpretation and solutions will be needed. Community alternatives like stepped-down care and home care services would allow patients to leave hospitals and receive care in more appropriate places, reducing pressure on the hospital system. These types of changes can be made quickly to improve health care. Over the longer term, health authorities and other stakeholders can focus on those aspects of the social and physical environment that impact health and quality of life.

Indicators are not perfect tools, and focusing on a small set of readily-available measures runs the risk of over-simplifying. This report can only hope to provide some useful points along the path to knowledge, accountability, and action towards improving health.

Conclusions and Priority Actions

Indicator trends are summarized in the table on the following pages. Definitions and explanations for this year's set of 93 indicators may be found in Appendix C. Where data permit (48 indicators), regional results are provided in Appendix D.

Goal 1: Living and Working Conditions

Income and social status are among the most important influences on health. People at each step on the income and social scale are healthier than those on the step below. The connection between socioeconomic conditions and health has been recognized, but this knowledge does not always translate into action. We need to devote more time, resources, and research efforts to reducing gaps in education, employment, income, housing, and other aspects of daily lives, so that some population groups and areas of the province are not left behind. The social safety net – through tax credits, social assistance, and other benefits – plays a vital role in providing people with the income and supports they need to achieve health.

Progress Toward British Columbia's Health Goals

GOAL 1: Living and Working Conditions

Indicator	**Trend**
Employment	
Unemployment rate	*Improving*
Workplace injuries	*Improving*
Decision-latitude at work	*Trend not available*
Income	
Low income rate	*Not much change*
Income assistance rate	*Improving*
Income inequality	*Not much change*
Participation and social integration	
Social support	*Not much change*
Volunteer rate	*Improving*
Crime rate	*Improving*
Children and youth in care	*Worsening*
Housing and community design	
Housing need	*Not much change*

Priority actions:

- Protect and improve social programs and tax policies that mitigate against growing inequalities in income. More equitable wage structures and progressive tax rates are examples.
- Increase the availability of affordable housing, especially for persons with mental illness and other special needs.
- Support initiatives that build community trust and participation in the activities of community life.

Goal 2: Individual Capacities, Skills and Choices

The effect of prenatal and early childhood experiences on subsequent health is very powerful. During this critical period, children acquire the sense of identity, the ability to learn, the social and coping skills, and the trust they need to lead healthy and productive lives. Although most British Columbia children are growing up healthy and well-adjusted, the number of low birthweight babies, inequalities in school achievement, rates of physical inactivity and substance abuse, and the frequency of mental and emotional problems are of concern. These issues need to be tackled in a coordinated way, if more children are to achieve their full potential. To improve population health – and to save health care and social costs down the road – we need to step up our investment in programs that help children and youth receive the best possible start in life.

Priority actions:

- Make high-quality child care and other early childhood services accessible to all children, without financial barriers. Provide targeted programs for children living in disadvantaged families and neighbourhoods.
- Assist communities to address the needs of young children in a coordinated, comprehensive manner, so that children and families do not fall through the cracks.
- Provide programs and supports for school completion, with special attention to disadvantaged students.
- Implement comprehensive programs to promote non-smoking, drug and alcohol awareness, regular physical activity, and healthy eating – starting at a young age.

Progress Toward British Columbia's Health Goals

GOAL 2: Individual Capacities, Skills, and Choices

Indicator	**Trend**
Healthy child development	
Low birthweight	*Not much change*
Breastfeeding	*Improving*
Family functioning	*Not much change*
School readiness	Improving
Learning opportunities	
High school graduation	*Improving*
Post-secondary education	*Improving*
Grade 12 exam completion rate	*Improving*
Healthy choices	
Smoking	*Not much change*
Regular heavy drinking	*Worsening*
Physical activity	*Not much change*
Healthy eating	*Trend not available*
Bicycle helmet use	*Improving*
High-risk sexual practices	*Not much change*
Teen pregnancy rate	*Improving*
Independent living	
Living in the community, age 65 and over	*Improving*

Goal 3: Physical Environment

The physical environment is very complex. Outdoor air pollution, second-hand smoke, and contaminated food and drinking water are the major environmental health risks that British Columbians face today. We know that damage to the sustainability of the earth's resources is important to health, too, but efforts to understand and measure the connections to human health are still in their infancy.

Priority actions:

- Develop risk assessment tools and community plans for improving air and water quality.
- Reduce motor vehicle emissions, through more stringent emission controls and by encouraging alternatives to single occupancy vehicles, such as public transportation, bicycle paths, and walking trails.
- Maintain food and water safety programs, such as testing and inspections.
- Develop better ways to measure and communicate issues related to sustainability of the physical environment and their connection to human health.

Progress Toward British Columbia's Health Goals

GOAL 3: Physical Environment

Indicator	Trend
Air	
PM_{10} air pollution	*Improving*
Exposure to second-hand smoke	*Improving*
Water	
Water quality index	*Not much change*
Boil-water advisories	*Not much change*
Food	
Critical hazards in food premises	*Not much change*
Food quality samples exceeding guidelines	*Not much change*
Land and soil	
Blood lead levels in children	*Improving*
Sustainability	
Greenhouse gas emissions	*Worsening*
Energy consumption	*Not much change*
Land in protected areas	*Improving*

Goal 4: Health Services

Many parts of the health system are working well, but there are signs that pressures are occurring. Emergency rooms are sometimes used for treating coughs and colds, some people are admitted to hospital for conditions that could have been prevented, while others remain in hospital because they are waiting for a long-term care bed or other form of care. Once discharged from hospital, patients are not always able to connect with the community services they need. Although seniors today are healthier than previous generations, chronic illnesses will increase as our population ages. To strengthen our health system, we must re-think how primary care is organized and delivered. Primary care takes place at the first point of contact with the health system – often in doctors' offices, health clinics, or community health centres. In 1999, British Columbia launched 7 Primary Care Demonstration Projects, and these will be evaluated over a three-year period ending March 2002.

Priority actions:

- Move swiftly to reorganize primary care according to the goals of the Primary Care Demonstration Projects. Explore and implement a variety of organizational models and payment mechanisms, while at the same time strengthening the linkages between primary care and local health authorities.
- Expand public information about appropriate treatment of common diseases. This could be done through the use of tools such as self-care handbooks, internet-based information, and the provision of telephone advice.
- Develop better information about the health services people receive, and whether their health is improving as a result of services provided.

Progress Toward British Columbia's Health Goals

GOAL 4: Health Services

Indicator	Trend
Accessibility	
Childhood immunization	*Not much change*
Influenza immunization	*Not much change*
Screening mammography	*Improving*
Pap smears	*Not much change*
Smoking cessation services	*Improving*
Dental visits in past year	*Trend not available*
Unmet health care needs	*Not much change*
Doing the right things right	
Opportunities for self-care	*Not much change*
Use of protocols and guidelines	*Improving*
Breast-conserving surgery	*Improving*
Cesarean deliveries	*Not much change*
Antibiotic prescribing	*Improving*
Preventable admissions to hospital	*Improving*
May Not Require Hospitalizations	*Improving*
Expected compared to actual stay	*Improving*
Alternate Level of Care days	*Worsening*
Community follow-up after hospitalization	*Trend not available*
Improving health	
Improved health behaviours	*Not much change*
Deaths due to medically-treatable diseases	*Not much change*

Goal 5: Aboriginal Health

The health status of Aboriginal people is improving, based on standard measures of health. Status Indian infant mortality has dropped dramatically and is approaching the general population rate – a major achievement. Compared to the non-Aboriginal population, Aboriginal people are more likely to be living in poverty, unemployed, and without a high school diploma, especially if they live on-reserve. Many Aboriginal communities have begun to make improvements in these conditions that ultimately affect their health. This is being achieved through community self-governance, including control over local health and social services.

Priority actions:

- Promote efforts to reduce poverty and improve living conditions in Aboriginal communities.
- Support efforts by Aboriginal people to achieve self-governance and a collective sense of control over their futures.
- Find out what works in helping Aboriginal students learn and stay in school, and ensure that Aboriginal students are supported.
- Encourage Aboriginal participation in health authority governance and in the design and delivery of culturally-appropriate health services. Implement programs to tackle tobacco use, Fetal Alcohol Syndrome, SIDS, youth suicide, HIV/AIDS, and other major threats to Aboriginal health.

Progress Toward British Columbia's Health Goals

GOAL 5: Aboriginal Health

Indicator	Trend
Health status	
Self-rated health	*Trend not available*
Infant mortality	*Improving*
Potential Years of Life Lost	*Improving*
Life expectancy	*Improving*
Factors affecting health	
High school completion rate	*Improving*
Unemployment rate	*Improving*
Low income rate	*Not much change*
Community control	*Improving*

Goal 6: Disease and Injury Prevention

Goal 6 identifies 16 specific diseases and health conditions that affect the health of British Columbians. These range from major killers like heart disease and cancer to causes of illness and disability such as HIV, mental illness, injuries, and birth defects. While these might seem to be quite a mixed group of conditions, in fact, there are some remarkable similarities. Many of these health problems have common risk factors and underlying causes.

Priority actions:

- In allocating resources, develop a "burden of illness" approach that considers the impact of illness and disability on people's daily lives. Such an approach reveals the otherwise hidden magnitude of mental illnesses and substance abuse as public health problems.
- Encourage stakeholder groups to work together to address smoking, physical inactivity, poor diet, stress, and other major risk factors for chronic disease.
- Tackle the root causes of disease and injury, which include problems with feelings and relationships, coping skills, poverty, marginalization, and stress.
- Develop a comprehensive plan for addiction services, with a focus on reducing the harms caused by alcohol and other drugs and on the management of concurrent problems such as mental illness.

Progress Toward British Columbia's Health Goals

GOAL 6:
Disease and Injury Prevention

Indicator	**Trend**
Non-communicable diseases	
Heart disease and stroke deaths	*Improving*
Cancer incidence and mortality	*Not much change*
Respiratory disease deaths	*Not much change*
Mental health hospitalizations	*Not much change*
Neural tube defects	*Improving*
Communicable diseases	
Vaccine-preventable diseases	*Improving*
Tuberculosis	*Not much change*
HIV infection	*Improving*
Sexually transmitted diseases	*Improving*
Food and waterborne diseases	*Not much change*
Waterborne disease outbreaks	*Not much change*
Injuries	
Unintentional injuries	*Improving*
Hip fractures	*Not much change*
Spousal assault	*Not much change*
Child abuse and neglect	*Worsening*
Illicit drug overdose deaths	*Not much change*
Suicide	*Not much change*

Introduction

Purpose and Scope

The Provincial Health Officer reports annually to British Columbians on their health status. This year's report has been designed to provide an update on progress toward achieving British Columbia's health goals. It also lays out the framework and the set of indicators that are being used by the Provincial Health Officer to monitor trends in the population's health.

British Columbia's six health goals, officially adopted by the province in 1997, identify the conditions we hope to create and maintain to achieve health for all British Columbians. The goals are comprehensive, covering most aspects of life – how we live and work, our individual skills and capacities, the physical environment, and health services.

The health goals development process included public consultations throughout the province, as well as input from all provincial government ministries and stakeholder groups in the health and many other sectors. From these consultations, there was consensus that health is much more than the absence of disease. Health involves wellness in all spheres – individuals who are able to lead productive and fulfilling lives, a society that is prosperous and stable, and an environment that is healthy today and sustainable for future generations. In adopting this broader view of health, we must go beyond describing the physical health status of British Columbians. We must also consider mental, emotional, and social well-being, as well as the many factors that influence health.

Some of the questions discussed in this year's report are:

- What are some of the indicators used to track progress towards the health goals?
- What do the data show? Are we making progress?
- Within the province, are certain regions or population groups healthier than others?
- Can we do better? What targets have been proposed?
- What actions can we take to improve health, as individuals and as a society?

Health Goals for British Columbia

Development

1991	Royal Commission recommends that health goals be developed
1993	Government commits to develop goals
1994	Provincial Health Officer asked to lead process
1994-96	Goals developed through consultation
1997	Goals approved by Cabinet
1998	Goals announced

Contents

Mission statement and 6 goals for the province

Working Guide, with 44 specific objectives and 150 examples of indicators for measuring progress

Implementation

Advisory Committee established to guide promotion, monitoring, reporting

Health Indicators

Indicators guide us toward the health goals, by giving us information about specific outcomes or objectives we are trying to achieve. The number of cases of measles, for example, tells us how we are doing in our efforts to eliminate this preventable disease. Similarly, the unemployment rate gives an indication of success in improving employment opportunities – an important influence on health.

Developing and defining indicators is an ongoing process that involves people coming together to reflect on what is important to us as a society and what measures best reflect our progress towards achieving health. *Health Goals for British Columbia*, published in March 1998, contains 44 specific objectives to strive for, along with more than 150 examples of indicators that could be used to measure progress.

This year's Provincial Health Officer's report includes many of the indicators listed in the *Health Goals* document. It also incorporates thinking and data from several national and provincial initiatives that have taken place since British Columbia's health goals were first developed. Some examples are:

- *Roadmap Health Indicators Project.* This project is identifying indicators and producing data to measure the health of the population and of the health system. Comparative information is being made available to regional health authorities across Canada, to assist them in improving the health of the population and the functioning of the health services for which they are responsible. The *Health Indicators Project* is one of 38 separate projects under the Roadmap Initiative, a collaborative effort between the Canadian Institute for Health Information (CIHI), Statistics Canada, Health Canada, provincial/territorial health ministries, and other stakeholder groups. Some of the indicators collected through this project have been reported in *Health Indicators 2000*, *Health Care in Canada 2000*, and in *Maclean*'s magazine special reports on health.
- *Toward a Healthy Future: Second Report on the Health of Canadians.* This 1999 report summarizes current information about the health of Canadians and the factors that affect their health. A complementary document, the *Statistical Report on the Health of Canadians*, provides detailed statistics and provincial/territorial comparisons on more than 80 topics and indicators. These landmark reports were produced by the Federal, Provincial, and Territorial Advisory Committee on Population Health, in collaboration with Health Canada, Statistics Canada, the Canadian Institute for Health Information, and a project team from the Centre for Health Promotion, University of Toronto.
- *Strategic Directions for British Columbia's Health Services System.* This document establishes nine goals, 23 objectives, and 57 sub-objectives that will guide the design and delivery of health services in British Columbia for the three-year period 1999 through 2002. As indicators are developed and data become available, the Ministry of Health's annual reports will provide information back to the public on performance against the objectives in *Strategic Directions*.
- *Other indicator initiatives.* Many provincial government ministries and other organizations are involved in developing indicators for specific topics, regions, and sectors. Examples include indicators for monitoring the state of the environment, performance of the education system, achievement of provincial goals and targets for injury prevention, and performance of local health authorities. Where possible, the Provincial Health Officer's report adopts the indicators and definitions developed by these expert groups. At the local level, Medical Health Officers play a key role in collecting and interpreting statistics about the health of the population in the communities they serve.

Indicators are not perfect tools. Death rates do not tell us about people's well-being and quality of life, and the rates at which people are admitted to hospital do not tell us whether their health is improving as a result. However, the indicators we have available are still important and useful for what they reveal about health today, progress we have achieved, and opportunities for improving health in the future. Individual organizations and communities will be able to identify alternate or more applicable indicators. We hope that the indicators in this year's report will provide a point of reference for those seeking to develop and use indicators as a basis for actions to improve health. Definitions, data sources, and an explanation for each indicator may be found in Appendix C.

Examples of Health Indicator Projects and Reports

Organization	Report	Contents
International		
World Health Organization	World Health Report	Annual report assessing the world's health. Year 2000 report ranks countries on their health system performance. Canada ranked 30 out of 191. http://www.who.int/whr/
United Nations Development Programme	Human Development Report	Annual report on various dimensions of human progress. On the Human Development Index, Canada has been ranked best in the world since 1994. http://www.undp.org/hdro
National		
Canadian Institute for Health Information and Statistics Canada	Health Indicators 2000	First-ever comparative data on health indicators for 63 regions across Canada, including 12 regions in British Columbia.
	Health Care in Canada 2000: A First Annual Report	National report on the health care system. http://www.cihi.ca/
Maclean's Magazine	Health reports	Ranking of health services (similar to annual ranking of universities) introduced in 1999. A second, more comprehensive ranking was produced in June 2000.
Advisory Committee on Population Health	Toward a Healthy Future: Second Report on the Health of Canadians	Report summarizing current knowledge and statistics on the health of Canadians and the factors that affect health. Statistical Report provides provincial comparisons on more than 80 topics and indicators. http://www.hc-sc.gc.ca http://www.statcan.ca
Provincial		
Provincial Health Officer	Provincial Health Officer's Annual Report	Annual report on the health of British Columbians and recommendations for action to improve health. Production of this annual report has been a legislated requirement since 1993. http://www.hlth.gov.bc.ca/pho
Ministry of Health	Annual Report	Annual report on ministry activities. Beginning with the 1998/99 report, key indicators are being used to report on health system performance. http://www.hlth.gov.bc.ca/cpa/publications/
Ministry for Children and Families	Measuring Our Success	Goals, indicators, and benchmarks for the health, welfare, and well-being of children, youth, and families. Second edition produced in December 1999. http://www.mcf.gov.bc.ca/reports_publications.htm
Ministry of Environment, Lands and Parks	Environmental Trends in British Columbia	Periodic reports on environmental indicators and progress towards sustainability. http://www.env.gov.bc.ca/sppl/soerpt
Local		
Health authorities	Health profiles and reports	Population profiles are developed locally as a component of each local health authority's Health Service Plan. In addition, most authorities produce regular reports on the health status of their area's population.

Targets

The *Health Act* requires that the Provincial Health Officer report on health "as measured against population health targets". Health targets for British Columbia have not been officially adopted. However, work has been done towards setting targets for many of the specific topics and objectives encompassed within the goals.

Where possible, targets towards which to aim are identified in this report. In some cases, the proposed targets represent new outcomes to achieve, such as improvements in workplace injury rates, smoke-free homes, or child poverty rates. In other cases, targets represent standards we have achieved and want to maintain, such as the current low rates of certain communicable diseases. Targets are often based on a "benchmark" – the best level of performance on the indicator that a region, province, country, or population group has been able to attain. For many indicators, targets are not proposed, usually because we lack sufficient baseline data or because current information systems do not collect the data required for ongoing monitoring.

Geographic Regions

The indicators presented in this report were compiled from various sources. In general, data from the *National Population Health Survey* and other national sources are available for the province as a whole, but not at the region or community level. Statistics Canada is currently developing a survey called the *Canadian Community Health Survey*. This new survey, scheduled to take place in late 2000, will become an important source of information about health status at the regional level.

Under British Columbia's new regionalized health system, introduced in 1997/98, responsibility for the direct delivery and management of most health services has been transferred from the Ministry of Health to local health authorities: 11 regional health boards, 34 community health councils, and 7 community health services societies. Regionalization has involved some boundary changes, a process that always creates a number of data conversion issues.

Over time, health information systems will be modified to reflect the names, numbers, and boundaries of the local health authorities. At the time this annual report was prepared, however, most information systems produced data based on 20 health analysis areas known as health regions. The 20 health regions are identical to those used in previous Provincial Health Officer's annual reports and in Vital Statistics Annual Reports for 1995 through 1998.

Health region data are available for 48 of the 93 indicators presented in this year's report. Where data permit, health region data are presented and discussed in the body of the report, and a summary of health region data is provided in Appendix D. A map showing the names and locations of the regions may be found in Appendix E.

Health Data Warehouse

For many of the indicators presented in this report, more detailed statistics can be obtained from the web site of the Ministry of Health's *Health Data Warehouse*. The *Warehouse* is available to health stakeholders in British Columbia. This includes Ministry of Health and related staff in local health authorities and in the Ministry for Children and Families. If you have not previously accessed the Health Data Warehouse, please follow the registration steps below.

Using a web browser such as Netscape or Internet Explorer:

Step 1: Register at the Health Matters web site
http://admin.moh.hnet.bc.ca

Step 2: Register at the Health Data Warehouse page
http://admin.moh.hnet.bc.ca/hdw

Confirmation of the access request will be returned by e-mail. For further information, please contact Data Access, B.C. Ministry of Health, telephone (250) 952-3179.

Future Reports

In future reports, the Provincial Health Officer will continue to provide updates on the health of British Columbians, using the health goals as a reference point. Reports in progress include a report on Drinking Water Quality, scheduled for completion in December 2000, and a report on Aboriginal health, which will be available in the year 2001. The Provincial Health Officer welcomes your feedback on all reports issued by the Office.

Provincial Health Officer's Reports

Since 1993, the Provincial Health Officer has been required by the Health Act to report annually to British Columbians on their health status and on the need for policies and programs that will improve their health. Some of the reports produced to date have given a broad overview of health status, while others have focused on particular topics such as women's health, child health, injection drug use, and immunization. Provincial Health Officer's reports are one means for reporting on progress toward the provincial health goals, which were adopted by the province in 1997.

Copies of the Provincial Health Officer's reports and the health goals document, Health Goals for British Columbia, are available free of charge. A list of publications and ordering information are available through the Ministry of Health web site

http://www.hlth.gov.bc.ca/pho
or by calling the Office of the Provincial Health Officer at (250) 952-0876.

Health Status of British Columbians

Mission: To maintain and improve the health of British Columbians by enhancing quality of life and minimizing inequalities in health status.

How healthy are British Columbians? This chapter illustrates some of the indicators we have available to measure the health status of British Columbians today. These indicators cover different aspects of health, including the level of general health and well-being, ability to carry out daily activities, the existence of disease or health problems, and length of life. Together, they provide an overall picture of how well we are doing toward achieving the health goals and, ultimately, our mission – to maintain and improve the health of British Columbians.

The data show a mixed picture. By most traditional measures, British Columbia continues to make remarkable gains in health, and we remain among the healthiest people in the world. On the other hand, this high standard of health is not shared equally by all British Columbians. There are large and persistent differences by age, sex, level of income and education, and geographic region.

Aspects of health discussed in this chapter include:

- well-being
- general health and ability to function
- health conditions
- deaths

Well-being is health in the positive sense. At present, there are few statistics available on the positive aspects of health and quality of life. Self-rated health, along with new measures of positive mental health, are beginning to provide a way to gauge the physical, mental, and social health of British Columbians.

The *National Population Health Survey*, initiated in 1994-95, has become the major source of information about positive health. In the coming years, the *Canadian Community Health Survey* will begin to provide similar information at the health region level.

What Do the Data Show?

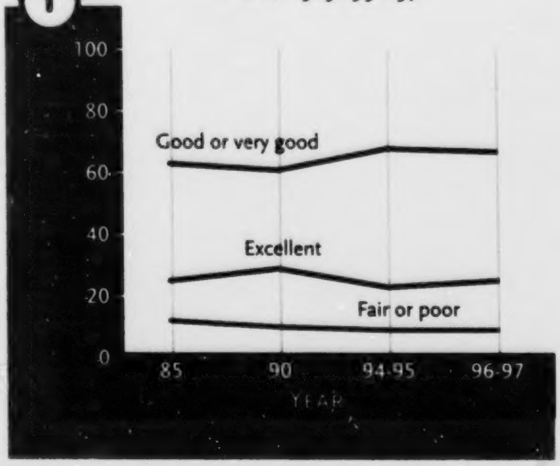
- Most British Columbians report excellent or very good health. Like most health indicators, the likelihood of having excellent health is linked to one's level of income and education.
- About three-quarters of British Columbians say they are happy and interested in life. Youth have poorer health that do adults and seniors, based on self-reported happiness, self-esteem, and other measures of mental health.

Self-Rated Health

In 1996-97, one-quarter of British Columbians (age 12 and over) said their health was excellent. This percentage has not changed much since the mid-1980s (Figure 1). Within the province, men, younger age groups, and those with the highest levels of income and education are more likely to report excellent health. The connection between self-rated health and income is particularly strong. People in the highest income bracket are twice as likely to report excellent health as those who are in lower income households (Figure 2).

Figure 1 Self-Rated Health

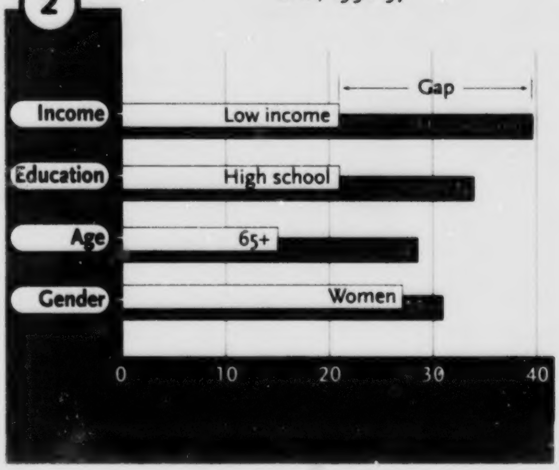
B.C., 1985-1996-97



Sources: Canada's Health Promotion Surveys 1985 and 1990 and Statistics Canada's National Population Health Surveys 1994-95 and 1996-97.

Figure 2 Differences in Excellent Health

B.C., 1996-97



Statistics Canada. National Population Health Survey 1996-97. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health.

Positive Mental Health

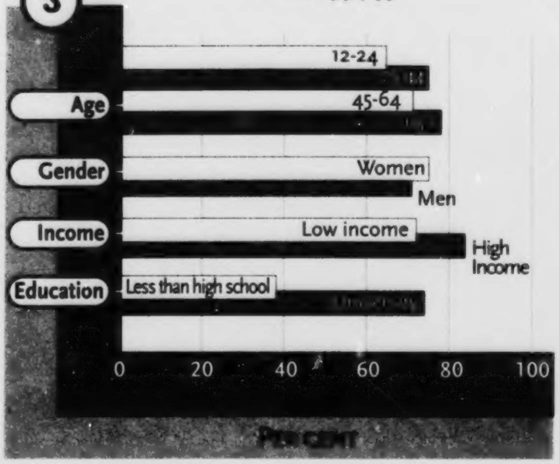
In 1994-95, the *National Population Health Survey* collected four measures of positive mental health: happiness, self-esteem, mastery, and sense of coherence. Happiness is a general measure of overall well-being and quality of life. Self-esteem refers to one's sense of self-worth as a person, while mastery measures the extent to which individuals feel their life chances are under their own control. Sense of coherence is a view of the world that life events are comprehensible, challenges are manageable, and life is meaningful. Each of these attributes contributes to our mental health and helps in coping with life's day-to-day challenges.

About three-quarters of British Columbians described themselves as happy and interested in life. Scores for self-esteem, mastery, and sense of coherence are based on arbitrary cut-off points. Self-esteem, for example, is calculated such that a score of 20 or greater on a 25-point scale is considered "high" self-esteem. The proportion of British Columbians with high scores is not meaningful in itself, but it does allow comparisons between population groups.

While many measures of physical health decline with age, the available measures of mental health actually improve with age. Seniors are more likely more likely to say they are happy (78 per cent) than are young people (65 percent). Self-esteem, mastery, and sense of coherence peak in the middle years of adulthood, then decline somewhat later in life. In other words, it is youth who often report lower levels of mental and emotional well-being, while adults, on average, report a more positive outlook on life. Mental health is also related to income and education. People with a university education are almost twice as likely to be happy and to have a high level of self-esteem than those who have not completed high school (Figures 3 and 4).

Figure 3 Happy, Interested in Life

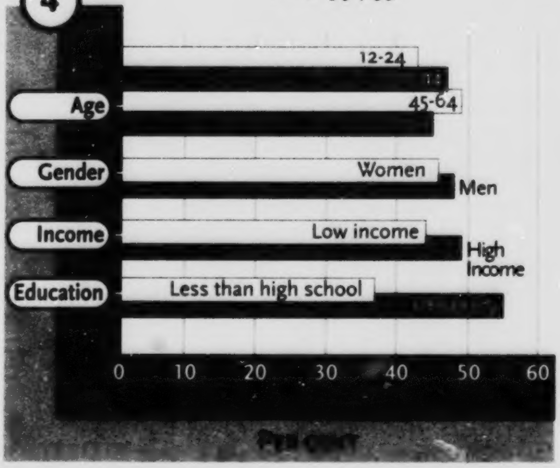
B.C., 1994-95



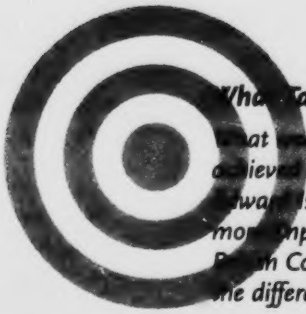
Source: Statistics Canada. National Population Health Survey 1994-95 Share Files. Prepared by Planning and Evaluation, B.C. Ministry of Health.

Figure 4 High Self-Esteem

B.C., 1994-95



Source: Statistics Canada. National Population Health Survey 1994-95. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health.



What Targets Are Achievable?

What would be a realistic target for excellent health and happiness? The best rate achieved by another province (Quebec, 27 per cent for excellent health and Prince Edward Island, 82 per cent for happiness) could be used as a benchmark. Perhaps more importantly, we can continue to track self-rated health and happiness within British Columbia, to see whether our overall level of health is changing, and whether the differences between groups are being reduced.

Because of the way scores are calculated, it would not be possible to set an absolute target for proportion of the population with a high level of self-esteem, mastery, or sense of coherence. However, these indicators do allow for comparisons between groups. For example, using the information in Figure 4, we could aim to improve the self-esteem of youth and women, relative to other groups.

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One way to assess overall health and quality of life is to consider people's ability to carry out everyday tasks and to participate in daily activities at home, school, or work. The *National Population Health Survey* collects several measures of general health and ability to function, including functional health status, activity limitation, and disability-days.

What Do the Data Show?

- In the older age groups, physical health problems are common, but adults and seniors today are healthier than their predecessors. Today, about 30 per cent of seniors say they are limited in their daily activities because of a health problem, compared to 43 per cent 20 years ago.
- Compared to other provinces, British Columbia has a high rate of disability-days. Almost one in five British Columbians report staying in bed or cutting down on normal activities because of illness or injury, on one or more days in the past two weeks.

Functional Health

On the functional health scale, most British Columbians (86 per cent) are in very good health, that is, either perfect health (a score of 1.0) or problems of a minor nature than can be corrected, such as near or far-sightedness or a slight hearing loss. This is a slight improvement from our results in 1994-95 (85 per cent), but somewhat below the Canadian average, which was 88 per cent.

Activity Limitation

In 1996-97, about one in five British Columbians (age 12 and older) reported having a long-term disability or handicap or being limited in normal activities either at home, school, or work. The most frequent causes of activity limitation were back problems and nervous system problems such as vision or hearing difficulties.

Not surprisingly, activity limitation increases with age. However, an analysis by Statistics Canada found that today's adults and seniors are healthier than their predecessors (Chen & Millar, 2000). In 1998/99, about 30 per cent of British Columbians age 65 and older reported that they were limited because of health problem, compared to 43 per cent 20 years ago (Statistics Canada, March 2000).

Two-Week Disability-Days

Results for 1996-97 show that almost one in five (18 per cent) British Columbians (all ages) stayed in bed or cut down on normal activities because of illness or injury, on one or more days in the past two weeks.

Compared with other provinces, British Columbia falls mid-range on long-term activity limitation, but we have the highest rate of disability-days (Table 1). British Columbians report an average of 1.05 disability-days in a two-week period, compared to 0.85 days for Canadians overall.

Table ① General Health and Function

	British Columbia		Range of Provinces
	1994-95	1996-97	1996-97
Very good health [1]	85%	86%	85%-91%
Long-term activity limitation [2]	22%	21%	14%-25%
Disability-days in past 2 weeks [3]	17%	18%	10%-18%

[1] Percentage of population aged 12 and over [illegible] based on eight dimensions of functioning: [illegible] use of hands and fingers, memory and thinking, [illegible] discomfort. [2] Percentage of population aged 12 and over [illegible] a disability or handicap or being limited [illegible] basis because of a health problem. [3] Percentage of the population (all ages) who stayed in bed or cut down on normal activities because of illness or injury on one or more days in the past two weeks. Source: Statistics Canada, National Population Health Survey [illegible] Canadians: Technical Appendix and Statistical Report on the Health of Canadians, Advisory Committee on Population Health [illegible]

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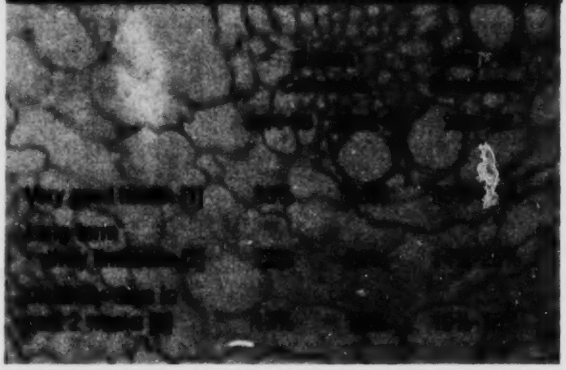


[1] Percentage of population age 12 and older with a score of 0.80-1.00, based on eight dimensions of functioning: seeing, hearing, speech, mobility, use of hands and fingers, memory and thinking, feelings, and pain and discomfort. [2] Percentage of population age 12 and older who report having a disability or handicap or being limited in certain activities on a continuing basis because of a health problem. [3] Percentage of the population (all ages) who stayed in bed or cut down on normal activities because of illness or injury, on one or more days in the past two weeks. Source: Statistics Canada. National Population Health Survey. In and Report on the Health of Canadians: Technical Appendix and Statistical Report on the Health of Canadians, Advisory Committee on Population Health, 1996 and 1999.

What Targets Are Achievable?

Activity limitation encompasses a wide range of health problems, such as back problems, arthritis, heart conditions, mental illness, and vision and hearing impairment. Because these conditions are so diverse, it would be difficult to set a single target for improvement on this measure. However, we know that reductions in activity limitation are possible. For example, many disabilities caused by injuries are preventable, and it is estimated that half of the cases of osteoporosis, a common condition among older women, could be prevented with a combination of lifestyle, diet, and therapy.

On the measure of disability-days experienced in the past two weeks, British Columbia is much less healthy than other regions of Canada. As with activity limitation, target-setting will need to focus on specific causes, such as reduction in injuries and specific short-term or long-term illnesses.

The rates at which specific diseases or conditions occur in the population help identify trends and patterns in illness or health problems. The number of people experiencing a given disease or health state also helps to determine the need for prevention, treatment, and support services.

This section reports on a few of the specific conditions and diseases that impact health and quality of life: being overweight, having a chronic disease such as arthritis or diabetes, and experiencing chronic pain or a mental health problem. Heart disease, cancer, injuries, and other major diseases are discussed under Goal 6, Disease and Injury Prevention. Low birthweight, a key indicator of child health, is discussed under Healthy Child Development, page 43.

What Do the Data Show?

- Too many British Columbians – at least 26 per cent of adults – are overweight, and this increases their risk of developing high blood pressure, diabetes, heart disease, and certain types of cancer.
- Allergies, back problems, and arthritis are the most common chronic conditions. Arthritis and high blood pressure are less common among adults and seniors today than in the past, while the prevalence of diabetes and asthma has increased, based on self-reported data.
- Almost 30 per cent of people age 65 and over say they experience chronic pain or discomfort.
- Approximately one in five people will have a mental illness during any given year, with depression, anxiety, and substance use disorders being the most common mental illnesses. According to the *National Population Health Survey*, about 5 per cent of B.C. adults are depressed, and one in six (18 per cent) say that stress affects their daily lives.

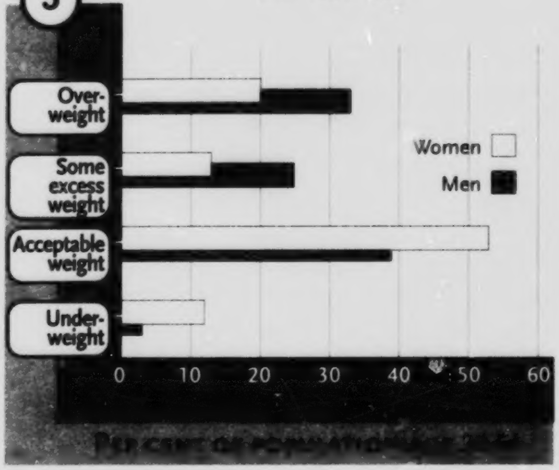
Overweight

Based on their self-reported weight and height, 46 per cent of British Columbians were in the acceptable weight range in 1996-97. About one-fifth (19 per cent) of adults had some excess weight, and an additional one-quarter (26 per cent) were considered overweight, putting them at risk for high blood pressure, diabetes, heart disease, and certain types of cancer. Men were more likely to be overweight than women (Figure 5).

Figure 5

Body Weight

B.C., 1996-1997



Overweight defined as Body Mass Index (BMI) 27.0 or greater. BMI is based on self-reported data on height and weight. Studies have shown that people tend to understate their weight. Thus, being overweight may be more common than these data suggest. Source: Statistics Canada. National Population Health Survey 1996-97. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health.

Although the proportion of British Columbians who are overweight has remained at the 1994-95 level (26 per cent), national surveys have shown that overweight has been increasing steadily since the mid-1980s. This trend is a cause for concern, because of its potential impact on health in the coming years. Furthermore, Body Mass Index is based on self-reported weight and height. Studies have shown that many people tend to understate their weight. Therefore, it is likely that being overweight is more common – and represents an even greater health problem – than the rates shown in Figure 5.

While this indicator focuses on the problem of overweight, being underweight can be a health problem, too. Underweight is more common among women (12 per cent), and women are more likely to struggle with body image, food, and weight problems. About two in five women are trying to lose weight, and it is estimated that between 1 and 5 per cent of women suffer from eating disorders.

Table 2 Chronic Conditions, B.C.

	[illegible]	[illegible]
Non-food allergies	19%	25%
Back problems	16%	16%
Arthritis	12%	14%
High blood pressure	8%	10%
Food allergies	7%	8%
Migraine headache	7%	8%
Asthma	6%	6%
Diabetes	2%	3%

Per cent of population age 12 and older who say they have a given condition, lasting at least six months and diagnosed by a health professional. Source: Statistics Canada. National Population Health Survey. *Diabetes: Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health. All other conditions:* Report on the Health of Canadians: Technical Appendix and Statistical Report on the Health of Canadians. *Advisory Committee on Population Health, 1996 and 1999.*

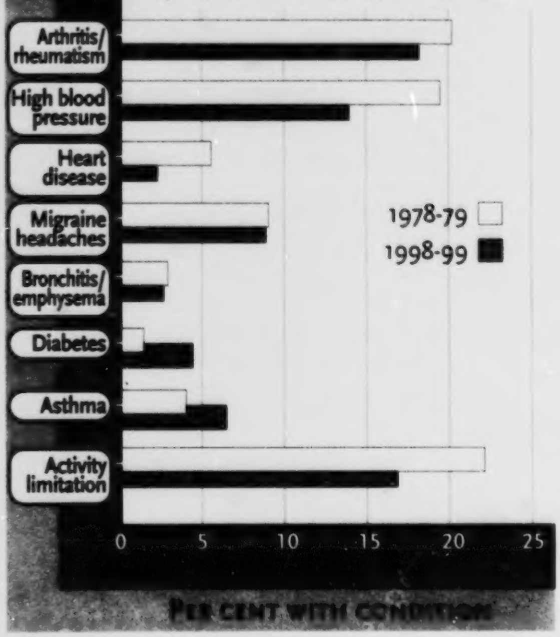
Chronic Conditions

For many of the specific diseases and conditions that affect the everyday lives of British Columbians, we rely on periodic surveys that ask people about the conditions they experience. Based on the *National Population Health Survey*, we know that many British Columbians have problems such as allergies, back problems, and arthritis. Most of these conditions have increased in frequency since the 1994-95 survey (Table 2).

Although chronic conditions can occur at any age, they are more common and cause greater disability among the older age groups. Are adults and seniors today healthier than previous generations? A recent report by Statistics Canada found a mix of improvements and declines (Statistics Canada, March 2000). Fewer adults report having arthritis, high blood pressure, heart disease, and activity limitation. On the other hand, diabetes and asthma have become more frequent, while migraine headaches and bronchitis have remained about the same (Figure 6).

Figure 6 Chronic Conditions and Activity Limitation

Age 45-64, B.C., 1978-79 and 1998-99



Data sources: 1978/79 Canada Health Survey. National Population Health Survey 1998-99. In How healthy are Canadians? Health Reports, Statistics Canada Catalogue No. 82-003-XPB, Winter 1999, Vol. 11, No. 3, p. 41.

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Asthma	6%	8%
Diabetes	2%	3%

Per cent of population age 12 and older [illegible] condition lasting at least six months and diagnosed by a health professional. Source: Statistics Canada, National Population Health Survey [illegible] Public Use Microdata Files. Prepared by Planning and Evaluation, [illegible] Ministry of Health. All other conditions: Report on the Health of [illegible] Technical Appendix and Statistical Report on the Health of Canadians, Advisory Committee on Population Health, [illegible]

Figure ⑥ Chronic Conditions and Activity Limitation

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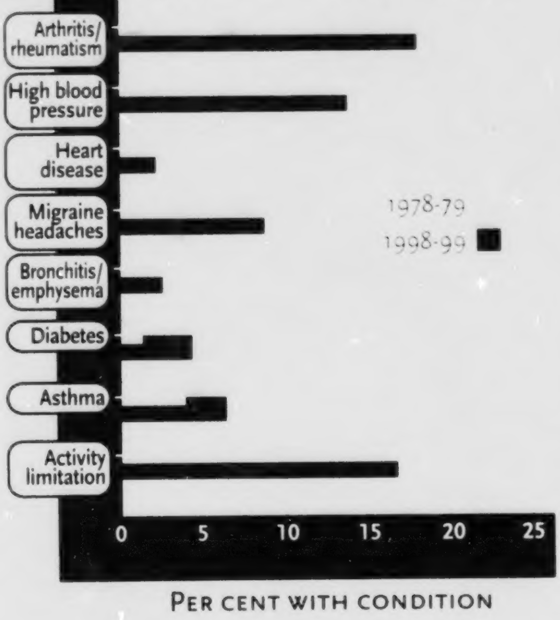


Data sources: 1978-79 Canada Health Survey; National Population Health Survey 1998-99. In How healthy are Canadians? Health Reports, Statistics Canada Catalogue No. 82-003-XPB, Winter 1999, Vol. 11, No. 3, p. 41

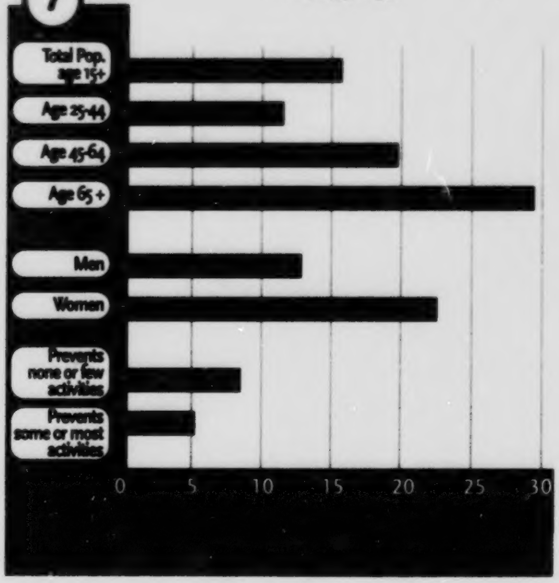
Chronic Pain

Based on data for 1994-95 and 1996-97, about one person in seven (between 15 and 16 per cent of British Columbians age 15 and over) experiences some chronic pain or discomfort. Chronic pain tends to be associated with conditions such as arthritis, and thus generally increases with age. At all ages, pain is more common among women than men. Most people reporting pain describe it as moderate or mild, rather than severe. About one-third of those with pain – 5 per cent of the population – say that pain limits their participation in some or most activities (Figure 7).

At this time, we lack time trend data to tell us whether the occurrence of chronic pain is increasing. This will be an indicator to monitor in the future, both as a general measure of population health and as an indication of the need for treatments and supports to help people manage pain.

Figure 7

Chronic Pain
B.C., 1996-97



Per cent of population age 15 and over who answered "no" when asked if they were usually free of pain or discomfort. Source: Statistics Canada. National Population Health Survey 1996-97. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health.

Mental Illness

About one in five people will have a mental illness during any given year. Many more people will experience mental health problems – signs and symptoms that warrant attention, but that do not meet the diagnostic criteria as a mental illness.

Depression, anxiety, and substance use disorders are the most common mental illnesses. Of every 100 people with a mental illness, 30 will suffer from depression, 20 from anxiety, and 16 will have disorders related to alcohol or drug use (Mental Health Advocate of B.C., 2000). A smaller number – about 3 to 5 per cent of the population – have a serious mental illness such as schizophrenia, bipolar disorder, or severe forms of depression. Persons with serious mental illness may have difficulty earning a living and maintaining housing, and they may require specialized treatment and periodic hospitalization.

The rate of severe mental illnesses appears to remain much the same over time, although changes in care mean that there are fewer numbers of people being treated in residential institutions. Some community studies have suggested that there is a rising trend in the rates of depression, anxiety, and substance use disorders. However, accurately estimating the number of people with mental illnesses is difficult. Many individuals are reluctant to report a history or episode of mental illness or to seek treatment, in part due to the stigma that our society attaches to mental illness.

Based on a national survey, 8 per cent of Canadians age 65 and over have dementia (5 per cent have Alzheimer's disease, and 3 per cent have other forms of dementia) (Canadian Study on Health and Aging Working Group, 1994). Although the prevalence of dementia is only slightly higher among women, in terms of numbers of cases, the ratio of women to men is almost two to one. Because women live longer than men, there are more women in the older age groups, when dementia is more likely to occur.

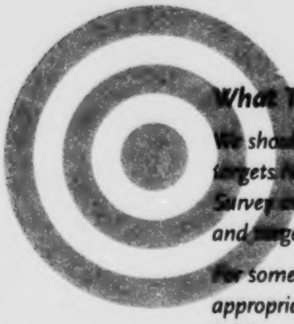
The *National Population Health Survey* provides British Columbia data on levels of depression, stress, and cognitive impairment. According to the *Survey*, 5 per cent of British Columbian adults were depressed in 1996-97. This was about the same result as in 1994-95, when 6 per cent were rated as being at possibly or probably depressed. In 1994-95, the most recent year for which B.C. data are available, one person in six (18 per cent) said that stress interferes with their daily lives and activities, and one in ten (11 per cent) had some cognitive impairment. The amount of current stress, the number of childhood traumas people had experienced, and the level of social support people had were strongly related to mental health problems, based on analysis of national data (Stephens, Dulberg, & Joubert, 1999).

Mental illnesses fall into distinct categories. However, the categories can be somewhat overlapping. Often, individuals have more than one type of mental illness, and this complicates treatment. Canadian studies report that about half of the people with schizophrenia have a substance misuse problem. For those with depression, the proportion is even higher at 60 per cent (BC Inter-Ministerial Task Group, 1999).

Mental Illness

Diagnostic Group	**Mental Disorders (examples)**
Severe mental illness	Schizophrenia
	Bipolar disorder
	Severe depression
Less severe mental illness	Mild or short-term depression
	Phobias
	Anxiety/Panic disorder
	Obsessive compulsive disorder
	Eating disorders
	Attention Deficit Hyperactivity Disorder
	Conduct disorders, e.g., aggression, destructive behaviours
	Emotional disorders of childhood and adolescence
	Sleep disorders
Substance-related disorders	Alcohol or drug psychoses
	Alcohol or drug dependence
Cognitive impairment	Alzheimer's disease
	Other forms of dementia

This list illustrates one way in which mental illnesses can be grouped when analyzing health statistics. For some individuals, "less severe" mental illnesses can be serious or even life-threatening. However, most health databases do not record severity. The standard classification systems for mental disorders are the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and the International Classification of Diseases (ICD-9). For more information about the diagnosis and epidemiology of mental illness, see Mental Health: A Report of the Surgeon General. *U.S. Department of Health and Human Services, 1999. http://www.surgeongeneral.gov/library/mentalhealth/*



What Targets Are Achievable?

We should aim to reverse the trend toward overweight. However, no specific objectives or targets have yet been proposed for British Columbia. As data from the Adult Nutrition Survey and the Canadian Community Health Survey become available, specific objectives and targets may be developed.

For some chronic conditions, targets for reducing the rates of occurrence are not appropriate, because there is no known method of prevention. Information such as that in Table 2 can help us identify opportunities for prevention, the need for treatment and support services, and areas where research is needed, in order to improve our knowledge of disease causes, prevention, and treatment.

Chronic pain is a relatively new indicator, and only two data points (1994-95 and 1996-97) are available for British Columbia. More data and discussion are needed before a British Columbia target can be considered.

Stress and childhood trauma increase the likelihood of mental health problems, while social support decreases it. This implies that many mental health problems could be prevented or at least minimized, if all children had a safe and healthy start to life and opportunities to develop the skills and resiliency they need to cope with life (Stephens, Dulberg, & Joubert, 1999). When mental health problems do occur, results can be dramatically improved if the signs and symptoms are recognized early, and if people receive the treatments and supports they need. The Ministry of Health and several partner groups have developed an Early Psychosis Initiative, which includes pilot projects and other activities aimed at identifying and helping young people who are in the early stages of psychosis. These projects may help to identify achievable targets in reducing the rates of mental illness.

What Actions Can We Take?

Individuals and families can:

- Follow Canada's Food Guide to Healthy Eating.
- Make physical activity a part of everyday life.
- Have a healthy attitude about yourself, your body, and weight.
- Seek help if you have a mental health problem or think you have symptoms of a mental illness.

Governments and organizations can:

- Implement a coordinated, comprehensive strategy to encourage healthy eating, physical activity, and healthy body image, along with a method to evaluate effectiveness.
- Encourage research that adds to scientific knowledge of chronic conditions, their causes, and methods of treatment.
- Continue to gather and analyze data to determine the state of British Columbians' mental health and the degree to which health and social services are meeting the needs of people with mental and behavioural problems.

Death rates and related indicators are commonly used to compare the level of health in different populations, or of a given population at different points in time. Three internationally-accepted measures are discussed below: infant mortality, potential years of life lost, and life expectancy.

What Do the Data Show?

- The traditional measures of population health – life expectancy, infant mortality, and death rates – continue to show gradual improvement, in all regions of the province. Areas of the province that have had the poorest health in the past have improved the most, so that regional differences in infant mortality and life expectancy are diminishing.
- The infant mortality rate, an internationally-accepted measure of population health, fell below 4 per 1,000 in 1999, another record low for the province. Only four countries – Finland, Japan, Norway, and Sweden – have achieved a rate this low.
- Early deaths due to heart disease, injuries, and other major causes continue to decline.
- Life expectancy at birth has reached to 77.2 years for men and 82.6 years for women, about 10 years longer than for babies born in the 1950s.
- Although gaps have been narrowing, large differences in health persist among regions and sectors of society. On almost every death-related measure, Aboriginal people, those with low income and education levels, and those living in the north and in parts of Vancouver do not have the same level of health as those in other groups and regions of the province.

Infant Mortality

Infant deaths in British Columbia reached an all-time low in 1998; 174 infants under one year of age died, of the 42,909 babies born, a rate of 4 per 1,000 live births. The rate dropped even further in 1999 – to 3.7 per 1,000 live births, based on preliminary figures.

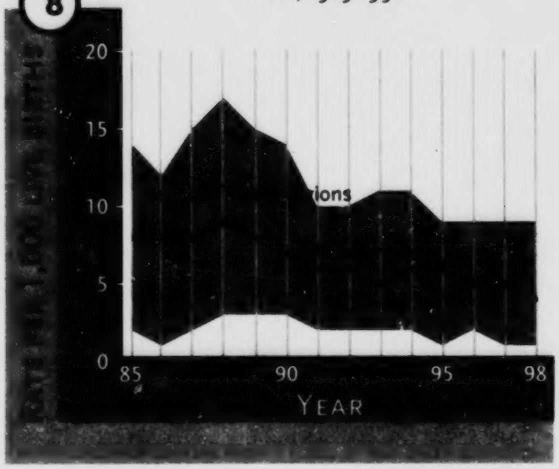
Infant mortality has continued to drop during this century, from 20 per 1,000 in the 1960s, to 8 a decade ago, and now dipping below 4 per 1,000 These declines have been achieved as a result of improvements in living and working conditions, control of contagious diseases, and advancements in the care of mothers and babies. At 4 per 1,000, British Columbia's infant mortality rate is equal to that of Finland, Japan, Sweden, and Norway – the best in the world.

Traditionally, northern and rural areas of British Columbia have had a much higher level of infant mortality, but rates have been declining in all regions of the province (Figure 8), and the north-south gap is narrowing. Since the late 1980s, the infant mortality rate in northern regions (Cariboo, North West, Peace Liard, and Northern Interior) has declined 50 per cent, while the decrease in the rest of the province averaged 30 per cent.

The major causes of infant deaths are low birthweight and other conditions that originate before or close to the time of birth, congenital anomalies, and Sudden Infant Death Syndrome (SIDS). Further reductions in infant mortality will require effective strategies to reduce these causes of death.

Figure 8

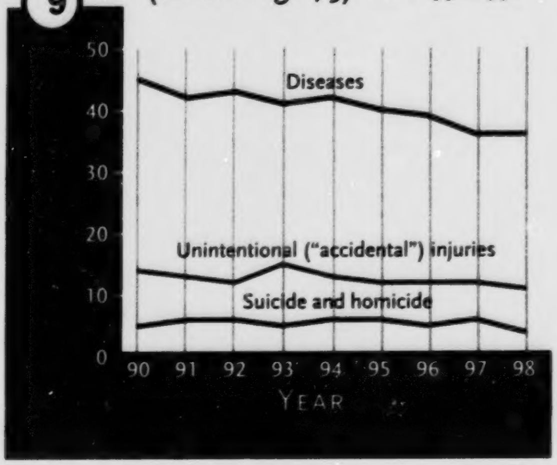
Infant Mortality Rate
B.C., 1985-1998



Infant deaths per 1,000 live births. Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Figure 9

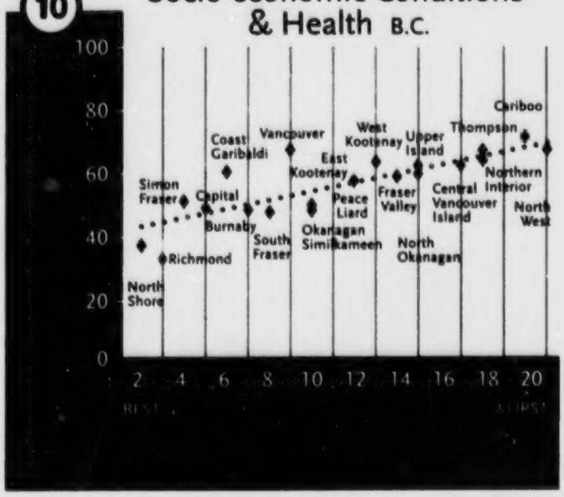
Potential Years of Life Lost (Before Age 75) B.C., 1990-1998



Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Figure 10

Relationship between Socio-economic Conditions & Health B.C.



Overall rank on three indicators. Education: Per cent of population age 25-54 without high school completion. 1996 Census, Statistics Canada. Employment: Unemployment rate, age 15 and over. 1996 Census, Statistics Canada. Income: Per cent of population age 0-64 on income assistance, as of September 1999. B.C. Ministry of Social Development and Economic Security administrative files and BC STATS poulation estimates. PYLL: Potential Years of Life Lost (before age 75), rate per 1,000 population (age standardized),1994-1998. B.C. Vital Statistics Agency, Ministry of Health.

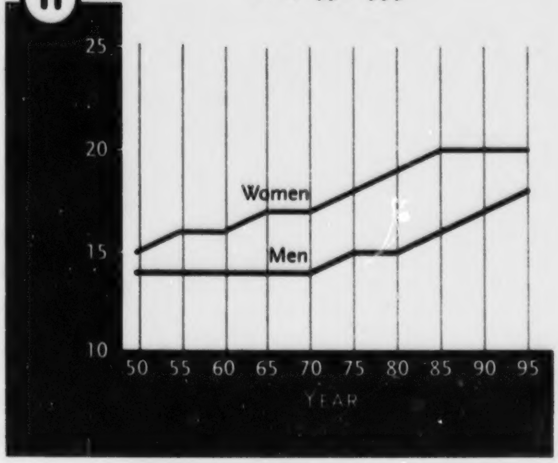
Potential Years of Life Lost

Early deaths as measured by Potential Years of Life Lost are declining steadily in British Columbia (Figure 9). Improvements have been made in postponing most causes of death, with particular success in reducing early deaths from heart disease and unintentional injuries.

Within the province, there is a two-fold variation in Potential Years of Life Lost, with Richmond and North Shore regions having the lowest rates. Dying prematurely is related to social and economic conditions in the community. In general, the better the ranking on indicators such as education, employment, and income, the lower the rate of premature death (Figure 10).

Figure 11 Life Expectancy at Age 65

B.C., 1950-1999



Source: BC STATS, B.C. Ministry of Finance and Corporate Relations.

Life Expectancy

Life expectancy has continued to increase, and the gains to date have been considerable – for both women and men. On average, a baby boy and girl born today can expect to live 77.2 and 82.6 years, respectively – about ten years longer than babies born in the 1950s.

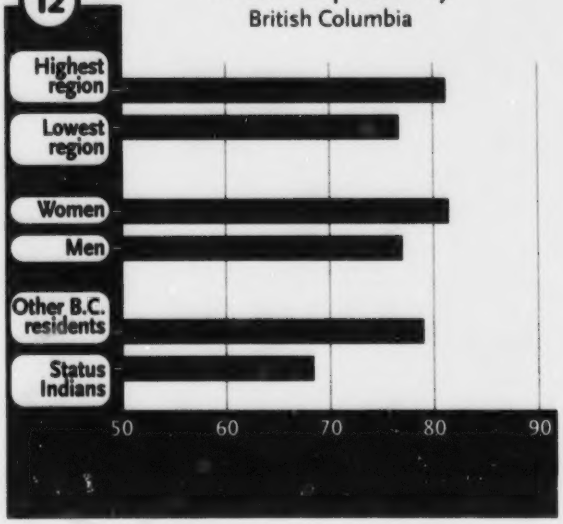
Prevention of infant deaths and deaths in the younger age groups have helped to add years to life. But gains have been made in health of older British Columbians, too. At age 65, a woman can expect to live another 21 years, while a man will live another 17 years. This is an increase of four to five years since the 1950s (Figure 11).

In spite of steady improvement, large gaps in health status persist among regions and sectors of society. Infant mortality and Potential Years of Life Lost rates in the Cariboo region are up to twice those of North Shore and Richmond, and rates for Status Indians are two to three times the provincial average. Gaps are also found in life expectancy. Status Indians are the most disadvantaged group, with an average life expectancy of ten years less than other B.C. residents (Figure 12).

Since the early 1980s, the gap in life expectancy between men and women has been narrowing. This is because men's life expectancy has been increasing more rapidly than women's, particularly in some regions of the province. Between the periods 1987-1991 and 1995-1999, men's average life expectancy increased 1.5 years, with gains of two to three years in the Cariboo, North West, and Northern Interior regions. In the same time period, women's gains were more modest – 0.9 years overall.

Figure 12 Diffferences in Life Expectancy

British Columbia



Status Indians and Other B.C. residents, 1997: B.C. Vital Statistics Agency. Urban Status Health Indicators, p. 75.
Highest and Lowest Regions, 1995-1999 and Women and Men, 1999: BC STATS, B.C. Ministry of Finance and Corporate Relations.

What Targets Are Achievable?

It should be possible to reduce the overall rate of infant mortality and to reduce the gap between regions and groups within the province. Sweden, for example, has little or no difference in infant mortality by social class, while in British Columbia, we continue to see a rather steep gradient between socioeconomic groups. There is no biologic reason to think that rates cannot be reduced to that achieved by the "best" population group or region. For the 5-year period 1994-1998, the lowest regional rate was 3.4 per 1,000 live births.

With regard to life expectancy, some experts believe we may eventually reach a biological maximum. However, the life expectancy of the healthiest groups should be attainable. If all British Columbians were to achieve the life expectancy of the "best" region (Richmond), the expected length of life for a baby born today would increase by about two years.

What Actions Can We Take?

Pregnant women and their families can:

- Maintain a healthy diet, with adequate amounts of folic acid and iron, before and during pregnancy.
- Don't smoke during pregnancy or around a baby, breastfeed your baby, put healthy babies on their backs to sleep, and keep babies at a comfortable temperature – not too hot or too cold.

The health system can:

- Screen women for health risks and chronic conditions (e.g., diabetes, hypertension, and sexually transmitted diseases) before conception.
- Provide access to high quality, coordinated care throughout pregnancy, labour and delivery, and during the post-partum period.
- Ensure that prenatal outreach programs are available and accessible to women at risk of low birthweight.
- Provide immunizations, screening for developmental risk factors, and other programs designed to maintain children's health.

Governments and organizations can:

- Ensure that all women who may become pregnant have sufficient income to provide for an adequate diet and vitamin/mineral supplements, where appropriate.
- Take actions to reduce cancer, injuries, heart disease, and other major causes of early death. Specific actions are identified under Goal 6, Disease and Injury Prevention.

Living and Working Conditions

Goal 1: Positive and supportive living conditions in all our communities.

Goal 1 has to do with the conditions we experience in our day-to-day lives. Meaningful work, healthy and supportive workplaces, sufficient income, supportive families and friends, and safe and well-designed communities significantly enhance our health. In fact, these living and working conditions are often the most important influences on health.

Living and working conditions include the following issues:

- employment
- income
- participation and social integration
- housing and community design

Objectives

- Improve and maintain equitable opportunities for employment for British Columbians, by expanding the diversity of the economy and ensuring the sustainability of economic activity.
- Reduce the concentration of marginalized and disadvantaged groups in lower paying and lower status jobs, and increase social recognition and valuing of jobs at all levels.
- Reduce the impact of job loss on individuals and communities, for example, through effective industrial adjustment strategies and re-training initiatives.
- Increase participation in decision-making and reasonable control over work tasks for all types of workers.
- Improve and maintain quality of life in the workplace, including:
  - protection from physical hazards and freedom from harassment;
  - family-friendly policies: policies and supports to help balance work and family responsibilities; and,
  - supports for workers with disabilities, chronic illnesses, or other special needs.
- Improve and maintain appropriate supports and protection for workers in non-standard employment situations such as part-time work, job sharing, home employment, and self-employment.

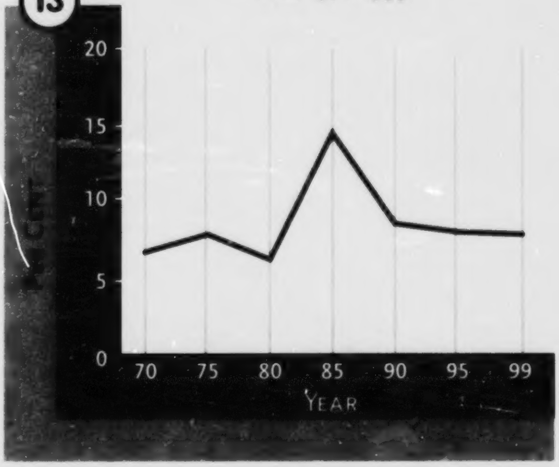
A healthy economy provides opportunities for employment and workplaces that are safe and where workers feel valued. The level of unemployment, the rate of workplace injuries, and the degree of control people have over tasks at work provide three ways to assess employment and working conditions. The following section presents information on these three topics, as a partial reflection of a complex subject.

What Do the Data Show?

- The unemployment rate has eased off in recent years, to 8.3 per cent of the work force in 1999.
- More women are employed in management and professional job categories traditionally dominated by men.
- The workplace injury rate decreased to 4.9 per 1,000 full-time workers in 1998, continuing the gradual decline that began in 1991.
- New workplace regulations are helping to protect workers from exposure to second-hand smoke (see page 67).
- Data are now available to measure decision-latitude at work, a factor that is associated with healthier and more productive workers.
- Employment opportunities are not equally distributed. Among health regions, there is more than a two-fold difference in unemployment rates.

Figure 13 Unemployment Rate

B.C., 1970-1999



Source: Statistics Canada Labour Force Surveys.
Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations.

Unemployment Rate

About one in every twelve B.C. workers – 8.3 per cent of the work force – was unemployed in 1999. These statistics are based on surveys in which people who don't have jobs are asked whether they are actively looking for work. Those who are looking are counted as unemployed.

Compared with other industrialized countries, British Columbia's unemployment rate has remained relatively high, and this presents a major barrier to making improvements in population health. Rates have eased off in recent years, but they have never returned to the rates of six to seven per cent prior to 1980s recession (Figure 13).

The overall unemployment rate hides differences in rates for regions and sectors within the province. Table 3 shows that jobs are not equally distributed. There is a two to three-fold difference in rates between regions, with the Cariboo and North West regions having the most unemployment and North Shore the least. Youth, women, Aboriginal people, visible minorities, and persons with disabilities are groups that have traditionally faced disadvantages in employment, including high unemployment, occupational segregation, pay inequities, and limited opportunities for career progression.

One area of success has been women's integration into management and professional job categories traditionally dominated by men. The number of women in senior management positions almost doubled – from 2,200 to 4,000 – between 1991 and 1996. There has also been progress in reducing the male-female gap in university professors, school principals, and lawyers (Figure 14). On the other hand, most women remain in more traditional roles. In 1996, more than half (58 per cent) of employed women were in clerical, sales, and service (retail, hotel, restaurant, etc.) occupations.

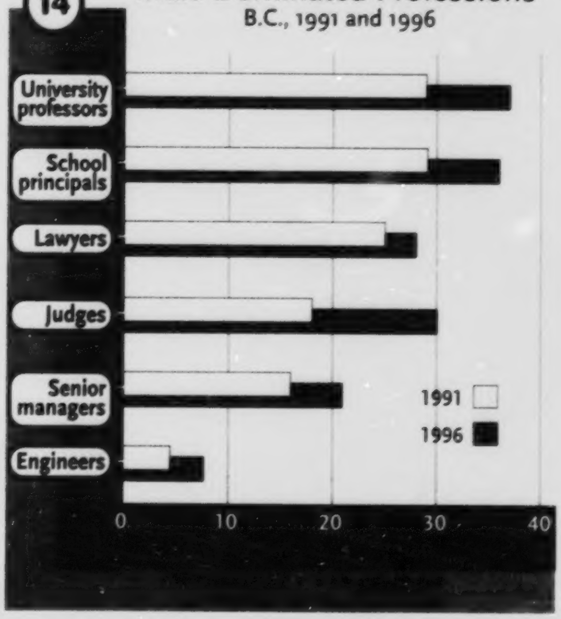
Table ③ Unemployment Rates, Selected Population Groups, B.C.

	[illegible]	[illegible]
Employment Equity Groups		
Women	[illegible]	[illegible]
Youth (age 15-24)	14.7%	[illegible]
Visible minorities	11.1%	[illegible]
Aboriginal people	22.4%	[illegible]
Persons with disabilities	24.7%	
Regions		
Lowest regional rate (North Shore)	[illegible]	[illegible]
Highest regional rate (Cariboo and North West)	[illegible]	[illegible]
Reference populations		
Men	10.1%	[illegible]
Total population age 15+	[illegible]	[illegible]

Source: 1996 Census, Statistics Canada. Fact Sheets on the Employment Equity Designated Groups, *1991, Cat. No. 89-6010.*

Figure ⑭ Women's Integration into Male-Dominated Professions

B.C., 1991 and 1996



Source: Statistics Canada, 1996 Census. 1996 Census Fast Facts, Issue 19. Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations.

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Table ③ Unemployment Rates, Selected Population Groups, B.C.

	1991	1996
Employment Equity Groups		
Women	10.5%	9.2%
Youth (age 15-24)	14.7%	15.9%
Visible minorities	12.1%	12.2%
Aboriginal people	22.4%	25.4%
Persons with disabilities	24.7%	-
Regions		
Lowest regional rate (North Shore)	6.9%	5.6%
Highest regional rate (Cariboo and North West)	14.2%	13.8%
Reference populations		
Men	10.1%	9.8%
Total population age 15+	10.3%	9.6%

Source: 1996 Census, Statistics Canada, Fact Sheets on the Employment Equity Designated Groups, 1991, Cat. No. [illegible]

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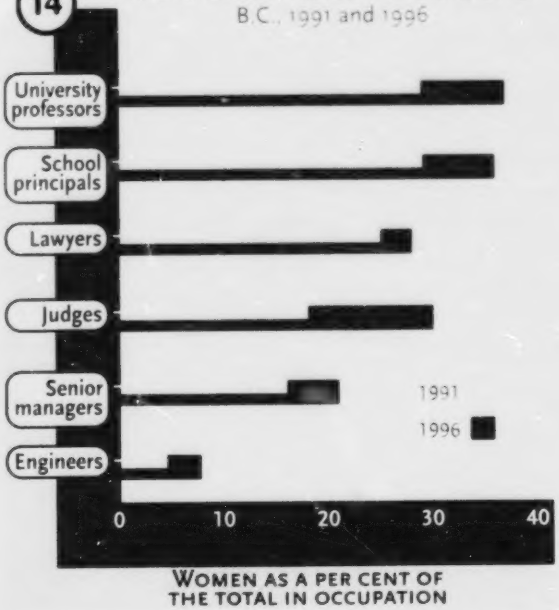
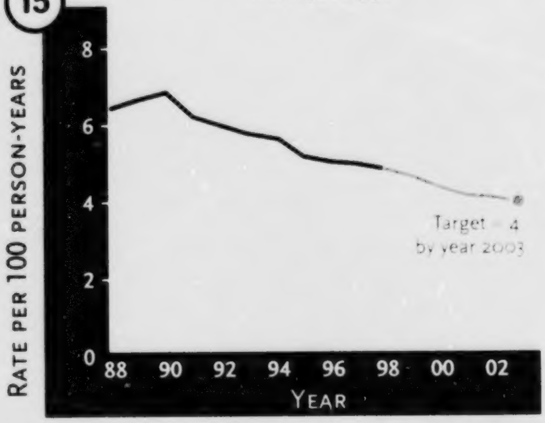
B.C., 1991 and 1996



Source: Statistics Canada, 1996 Census, 1996 Census Fast Facts, Issue 19
Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations

Figure 15 Workplace Injury Rate

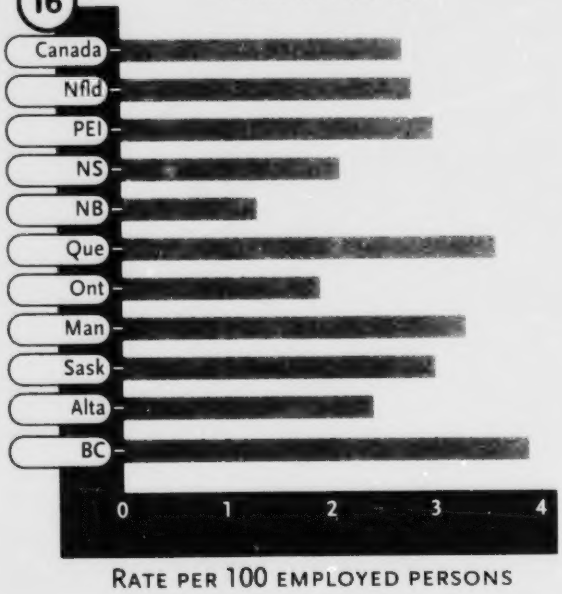
B.C., 1988-1998



Number of short-term disability claims per 100 person-years of employment. 1998 figure is preliminary.
Source: Workers' Compensation Board of British Columbia 1998 Annual Report and British Columbia Profile 1999

Figure 16 Workplace Injury Rates

Across Canada, 1997



Source: British Columbia Profile 1999. Prepared by the Workers' Compensation Board of British Columbia, Prevention Division, Evaluation and Research, February 1999. Different data sources and definitions were used for Figures 15 and 16. Thus, the B.C. injury rate differs in these two Figures.

Workplace Injuries

British Columbia's workplace injury rate has been declining steadily since 1990 (Figure 15). However, we have the highest injury rate in Canada (Figure 16), and the rate at which British Columbians are hurt on the job remains much too high. In 1998, 69,431 new workplace injury claims were paid, a rate of 4.9 claims for every 100 full-time workers, and more than 3.3 million work-days were lost due to occupational injuries and diseases. Most of these injuries are preventable.

Decision-Latitude At Work

The data we have available on quality of working life come from the 1994-95 *National Population Health Survey*. In that survey, about two-thirds (68 per cent) of B.C. workers said they have a lot to say about what happens at their work, indicating a relatively high degree of control or "decision-latitude" in their work. Half of the workers said they were very satisfied with their jobs, and 4 per cent reported a high level of work stress. British Columbia's results on these questions were close to the Canadian average (Table 4).

Table 4 Working Conditions, 1994-95

	Decision-Latitude [1]	Job Satisfaction [2]	High Work Stress [3]
Highest provincial rate	70%	58%	5%
British Columbia	68%	50%	4%
Canada average	63%	50%	4%
Lowest provincial rate	51%	47%	3%

[illegible]

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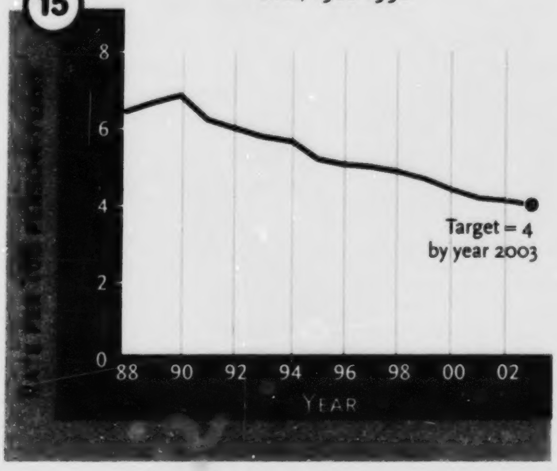
B.C., 1988-1998



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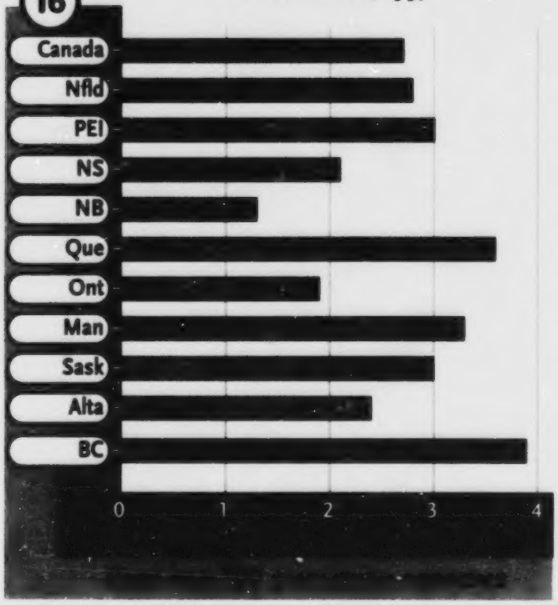

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	Decision-Latitude [1]	Job Satisfaction [2]	High Work Stress [3]
Highest provincial rate	70%	60%	5%
British Columbia	68%	50%	4%
Canada average	63%	50%	4%
Lowest provincial rate	51%	47%	3%

[1] Per cent of workers who say they have a high degree of control over their work circumstances (who agree or strongly agree with the statement "I have a lot to say about what happens at my work").
[2] Per cent of workers who say they are very satisfied with their jobs.
[3] Per cent of workers who have a high level of work stress, based on a set of 12 questions about their working conditions. Source: Statistics Canada. National Population Health Survey 1994-95.

What Targets Are Achievable?

Traditionally, a figure of 4 per cent was considered as full employment, allowing for normal turnover in the job market. More recently 8 per cent has been referred to as Canada's "natural rate of unemployment", the lowest rate that unemployment may reach without sparking inflation (Beamish & Sanger, 1996). Target and approaches for British Columbia's unemployment rate could include:

- *6.7 per cent – British Columbia's unemployment rate prior to the 1980s recession.*
- *5.5 per cent – the unemployment rate of the best-educated group.*
- *5.6 per cent – the lowest regional rate in 1996 (the most recent year for which health region data are available).*

The Workers' Compensation Board has set a goal to lower the injury rate by 4 per cent a year, down to 4.0 injury claims for every 100 person-years by the year 2003.

This is the first time that decision-latitude data have been available for British Columbia. More discussion is needed to determine whether this is a useful measure of the quality of working life, and what targets might be attainable.

What Actions Can We Take?

Workers can:

- Make occupational health and safety a priority.
- Be ready for changes that are occurring in the nature of work. Think about your expectations for work and consumption, and your options for re-defining work (upgrading skills, re-training, working less, job sharing, home employment, etc.).

Employers can:

- Increase employment and advancement opportunities for groups that face disadvantages in employment. These include women, young people (especially young men with low levels of education and lone female parents), Aboriginal people, members of visible minority communities, and people with disabilities.
- Encourage employee participation in decision-making and control over work tasks.
- Provide family-friendly policies and supports, such as flexible work arrangements, on-site child care, and parental leaves.
- Make occupational health and safety a priority.

Governments and organizations can:

- Develop better ways to monitor employment and unemployment, so that we are able to evaluate the effects of industrial and government decisions that affect the number and type of jobs that are available.
- Develop ways to measure and monitor the quality of work environments.

Family-Friendly Workplaces

Many families have trouble balancing their work and family responsibilities. Flexible work arrangements, on-site child care, maternity and parental leaves, and leaves for family illness are some of the ways that organizations can help their employees to manage their family obligations.

In spite of its importance, we have few data on family-friendly workplaces in British Columbia. Because of the connections between work life, the health of workers and their families, and the productivity of their workplaces, we should develop ways to measure the extent to which work environments are family-friendly.

Objectives

- Reduce poverty in British Columbia.
- Reduce the gap between British Columbians at the lowest and highest income levels, to achieve a more equitable income distribution.

There is a close relationship between income and health. An adequate income is important for health and, conversely, low income is associated with poor health status. Certainly, not all people with low incomes have poor health, just as not all people in well-off families have excellent health. But studies in Canada and elsewhere consistently show that, on average, people at each step on the income scale are healthier than those on the step below.

The Low Income Rate and the Income Assistance Rate are commonly used to assess the level of economic hardship, while income inequality measures tell us whether incomes are shared equitably among the population.

What Do the Data Show?

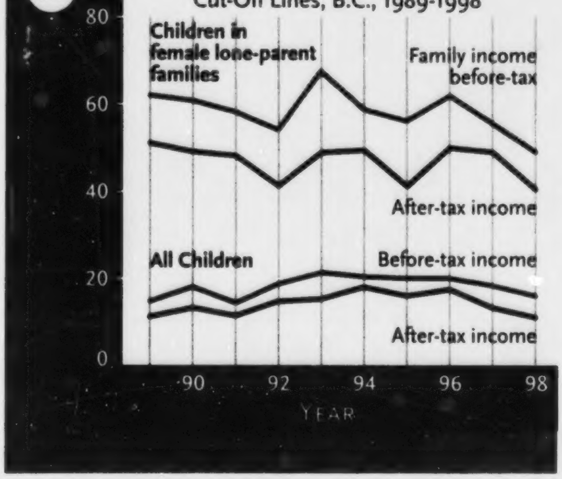
- Steps have been taken to reduce poverty, and the number of people on income assistance has been declining steadily since 1995.
- The proportion of people considered to be "low income" dropped in 1997 and again in 1998. However, 11 per cent of children, 18 per cent of seniors living alone, and 41 per cent of children in female lone-parent families were below the Statistics Canada low income after-tax cut-off point in 1998. Poverty remains a major barrier to improving health.
- Many income assistance recipients and low-income earners cannot afford to purchase adequate and nutritious food. A family of three supported by one parent earning the minimum wage would need to spend one-quarter of the family budget on food, in order to meet Canadian guidelines for healthy eating. After food and rent costs, this family would have $353 for all other living expenses.
- Some regions of the province experience more than their share of economic hardship. Central Vancouver Island has the highest income assistance rate (9.4 per cent), while Vancouver has the highest rate of severely needy seniors, based on those who receive the maximum Guaranteed Income Supplement (8 per cent). In general, regions with the highest rates of economic hardship have the poorest health status.
- The richest 20 per cent of B.C. families had an average income of $117,954 (before taxes and government transfers) in 1998 – about 11 times more than the poorest families ($10,824). After taxes and transfers, the highest income families had about $5 for every dollar the lowest income quintile had, a ratio that has remained fairly stable for the past ten years.
- New data are available to measure income inequality for geographic regions within the province. Based on the "income share" of the poorest half of households, Vancouver has the greatest gap between the rich and the poor, but most regions in British Columbia have values that are tightly clustered about mid-way between equality and inequality.

Low Income Rate

An estimated 432,000 people, 11 per cent of the B.C. population, were classified as "low income" in 1998, based on their after-tax income. Recently, Statistics Canada shifted the way it reports low income data by highlighting the after-tax low income rates. This results in a lower number of people being below the low income cut-off (LICO) than do calculations based on pre-tax income, because the tax system helps to redistribute income[1]. Using either measure, the percentage of children below the low income line dropped in 1997 and again 1998 (Figure 17). In spite of this encouraging trend, low income remains common, especially among children in female lone-parent families (41 per cent) and seniors living alone (18 per cent) (Figure 18).

Figure 17 Low Income Rates - Children

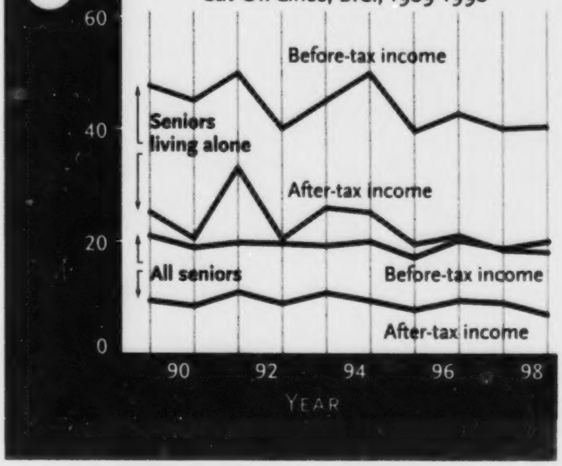
Pre-Tax and Post-Tax Low Income Cut-Off Lines, B.C., 1989-1998



Source: Statistics Canada. Income in Canada, 1998. Catalogue 75-202-XIE. Rates fluctuate from year to year, in part due to survey sample size.

Figure 18 Low Income Rates - Seniors

Pre-Tax and Post-Tax Low Income Cut-Off Lines, B.C., 1989-1998



Source: Statistics Canada. Income in Canada, 1998. Catalogue 75-202-XIE (seniors living alone or with others to whom they are unrelated) and unpublished tables (all seniors age 65 and over). Rates fluctuate from year to year, in part due to survey sample size.

The importance of reducing child poverty in particular has been recognized provincially and nationally.

In 1989, the House of Commons passed a unanimous resolution to eliminate child poverty by the year 2000. In 1991, Canada ratified the United Nations *Convention on the Rights of the Child*, which commits countries to ensure that all children have an adequate standard of living. British Columbia has indicated its support for these commitments. While practical steps have been taken – redesigning the system of child tax benefits is an example – we remain far from the goal of eliminating poverty, and this presents a major barrier to improving population health. A recent UNICEF report ranked Canada among the worst performing countries in the child poverty league (of 23 wealthy countries, Canada ranked 17). UNICEF describes the problem this way:

> The persistence of child poverty in rich countries undermines both equality of opportunity and commonality of values. It therefore confronts the industrialized world with a test both of its ideals and of its capacity to resolve many of its most intractable social problems (UNICEF Innocenti Research Centre, June 2000).

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[1] *For an explanation of the difference between using te pre-tax and post-tax income to measure low income, see Statistics Canada's* Income in Canada *publication (Catalogue No. 75-202, June 2000) and/or the Canadian Council on Social Development web site (http://www.ccsd.ca).*

Income Assistance Rate

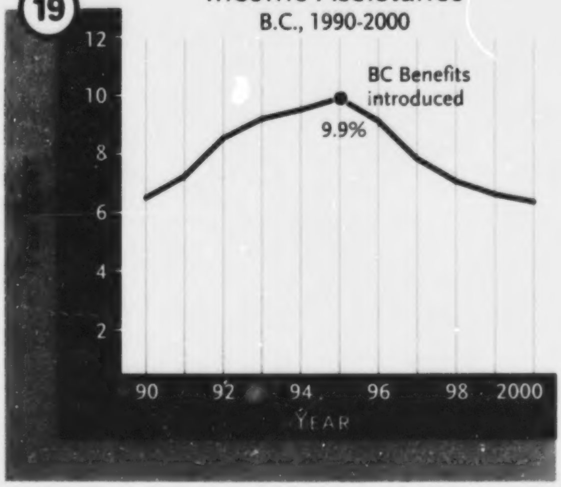
More than 262,000 people, approximately 6 per cent of British Columbians, were receiving income assistance in March 2000. These figures are based on those receiving BC Benefits, the provincial program that provides financial assistance to individuals and families whose resources are inadequate to meet their needs and who have exhausted other means of support. BC Benefits was introduced in December 1995, as part of a major effort to reform British Columbia's income assistance programs.

The income assistance rate has declined almost 30 per cent since BC Benefits began in 1995, when almost one person in ten (9.9 per cent of the population) was on welfare (Figure 19). A portion of the decline in 1996 was a function of tightening the rules of eligibility. But since then, the income assistance rate has continued to decline, and most recipients leave income assistance because they have found work. The numbers of children, families, and most other categories receiving assistance have declined, with the exception of those receiving disability benefits due to a mental or physical impairment. The number of disability benefits recipients has increased substantially – 59 per cent since 1995.

Figure 19

Population on Income Assistance

B.C., 1990-2000

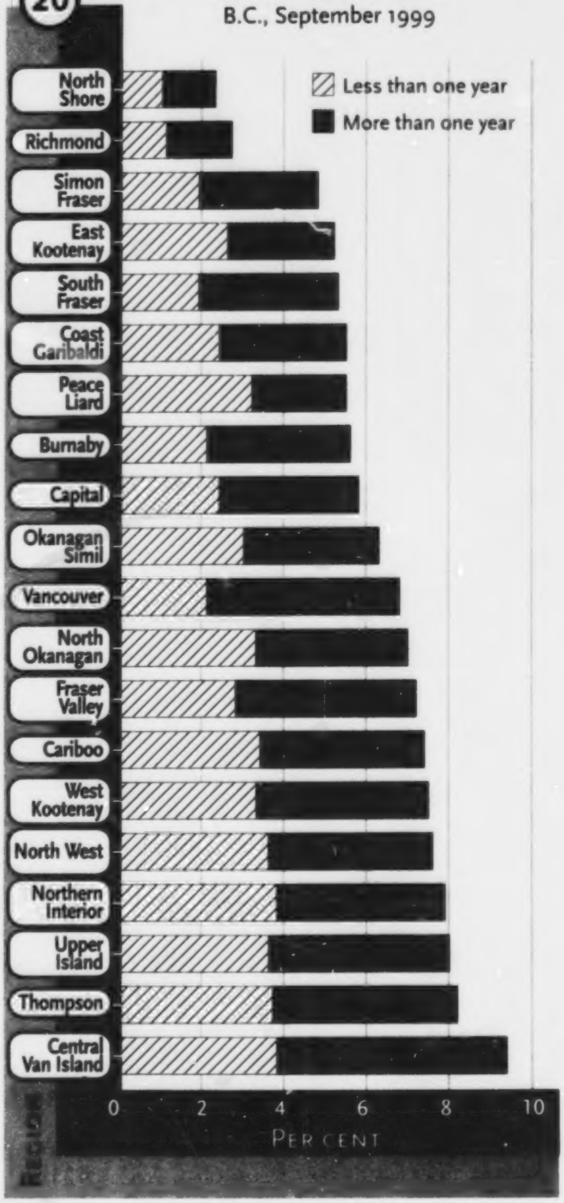


Income support beneficaries as a per cent of the B.C. population. Source: B.C. Ministry of Social Development and Economic Security. Monthly Statistics - BC Benefits, March 2000.

Figure 20

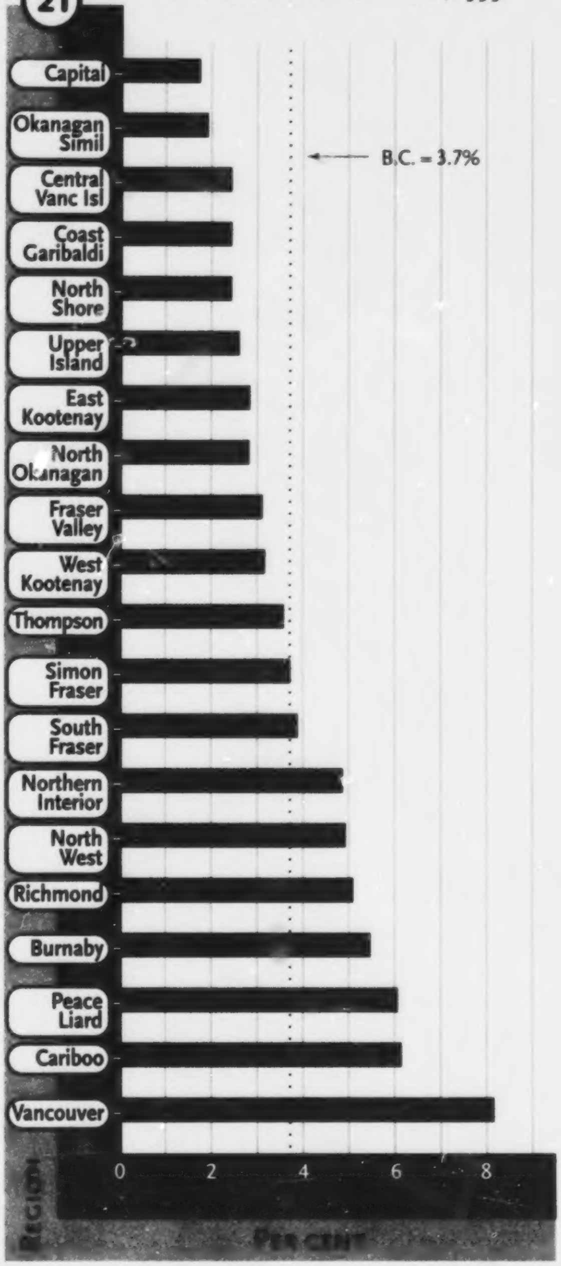
Population on Income Assistance

B.C., September 1999



Per cent of the population age 0-64 receiving Basic BC Benefits. Prepared by BC STATS, Ministry of Finance and Corporate Relations.

Figure 21 Seniors Receiving Maximum GIS* B.C., 1999



Guaranteed Income Supplement, a federal program that provides income assistance to needy persons age 65 and older. About one-third of seniors receive some GIS supplement. This graph shows the percent who receive the maximum supplement and thus could be considered severely needy. Source: Human Resources Development Canada. Prepared by BC STATS, Ministry of Finance and Corporate Relations.

More than half of those on income assistance have been receiving it continuously for more than one year. This long-term need for support represents a more serious hardship, because it can lead to an even greater loss of control over decisions in one's life. Short-term need for assistance could be the result of an unusual circumstance that will rectify itself in a few months. Short-term levels can also provide clues about demographic make-up of the population (youth working in temporary jobs) or the job structure of the local economy (seasonal jobs or a warning of worsening times).

Figure 20 shows the regional pattern in income assistance rates. Central Vancouver Island has the highest rate (9.4 per cent), while Vancouver has the second highest rate of long-term dependence. Rates are lowest in North Shore and Richmond (2.3 and 2.6 per cent, respectively).

For needy seniors age 65 and above, the federal Guaranteed Income Supplement program provides income support. About one-third (32 per cent) of British Columbia's seniors receive some supplementary income under this program. Those who receive the maximum supplement can be considered severely needy. According to this measure, about 4 per cent of seniors experience economic hardship. By region, the proportion receiving the maximum subsidy ranges from less than 2 per cent in Capital and Okanagan Similkameen regions to more than 8 per cent in Vancouver (Figure 21).

Ability to Purchase Nutritious Food

A further measure of economic hardship is having insufficient income to purchase food. In the 1996-97 *National Population Health Survey*, 6.4 per cent of Canadians said that their household had run out of money to buy food, at some point in the past 12 months. Food bank surveys show that more than 71,000 British Columbians – almost 2 per cent of the population – used a food bank in 1999, and usage is escalating (Canadian Association of Food Banks, 1999).

Food Basket surveys show that there is sizable gap between the cost of food and the amount of income available to many British Columbians. In June 2000, community nutritionists surveyed 130 grocery stores throughout the province to determine the cost of healthy eating, using a food costing survey recently developed by Health Canada. The average cost for the Nutritious Food Basket was $592 per month for a family of four. For families on income assistance, this would leave $420 for clothing, transportation, school supplies, recreation, toiletries, household and cleaning supplies. The working poor experience similar problems. A family of three supported by a single parent earning the minimum wage would need to spend one-quarter of the family budget on food, in order to meet the Health Canada's guidelines for healthy eating. After food and rents costs, this family would have $356 for all other living expenses (Canadian Association of Food Banks, BC Branch, 2000).

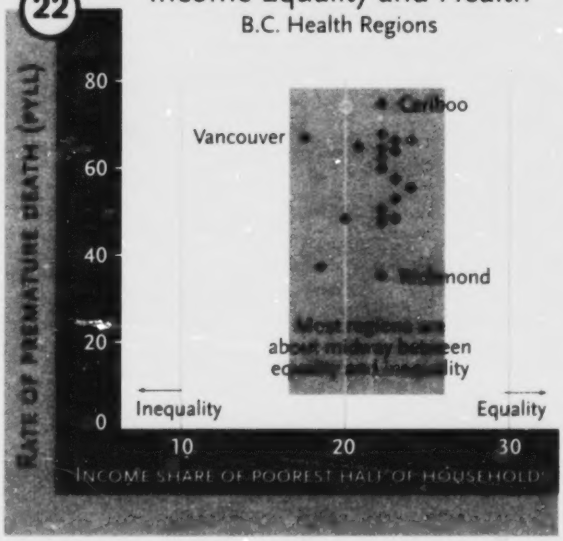
Nutritionists will be conducting this Food Basket survey on an annual basis, and this will provide important information about the extent to which income assistance recipients and low income earners are able to meet their basic needs for food.

Income Inequality

Income inequality is measured in various ways, some of which require complex and technical calculations. One way to measure the gap between the richest and the poorest groups is to determine the income share of the bottom half (poorest) families. In a situation of perfect equality, the bottom half of families would receive half (50 per cent) of the total income. According to this measure, Vancouver has the greatest gap between the rich and the poor. However, most regions in British Columbia have values that are tightly clustered around 22 per cent. That is, the bottom 50 per cent of families have 22 per cent of the income, about mid-way between equality and inequality. Based on these data, inequality within a region does not seem to be related to traditional health status measures. Richmond and Cariboo have about the same amount of income equality, yet have very different levels of health status -Richmond has the lowest (best) rate of premature death in the province, while Cariboo has the highest (Figure 22).

Figure 22 Relationship between Income Equality and Health

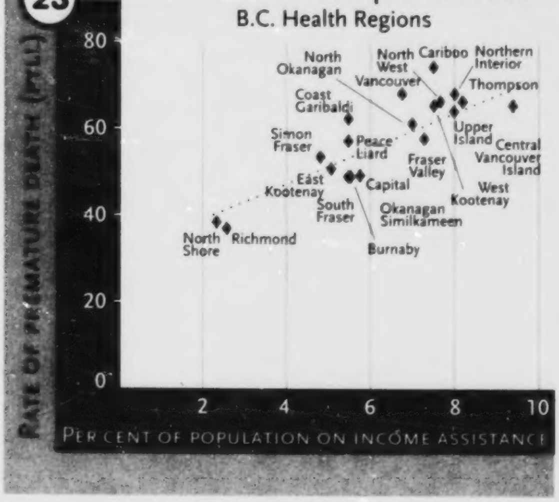
B.C. Health Regions



Income share of poorest half of households: The proportion of each region's household income that accrues to households earning less than the median income. In a situation of perfect equality, the bottom half (poorest) households would receive 50 per cent of the total income. In B.C., most health regions have values around 22%. Regions with values closer to 50% are more equal, while regions with lower values are less equal in terms of their household income distribution. Source: Statistics Canada, 1996 Census. Data provided by Statistics Canada, Health Analysis and Modeling Group. PYLL: Potential years of life lost (age under 75 years), all causes of death, average annual rate (age standardized) per 1,000 population, 5-year period 1994-1998. B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Figure 23 Relationship between Economic Hardship and Health

B.C. Health Regions

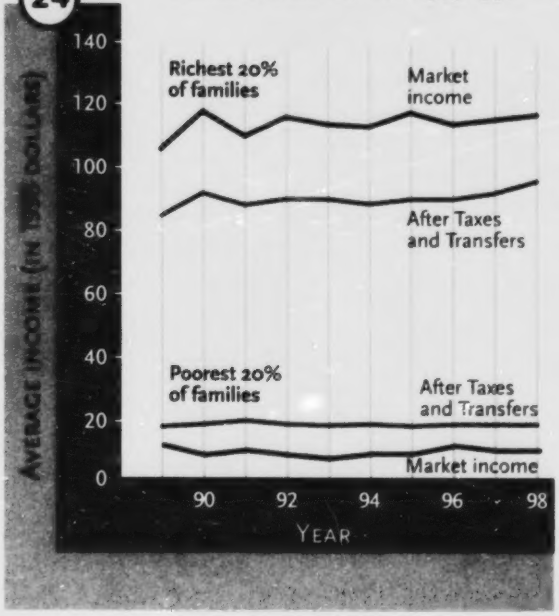


Income Assistance: Per cent of the population age 0-64 receiving Basic BC Benefits, September 1999. Prepared by BC STATS, Ministry of Finance and Corporate Relations. PYLL: Potential years of life lost (age under 75 years), all causes of death, average annual rate (age standardized) per 1,000 population for 5-year period 1994-1998. B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

From other data in this report, we know that income assistance rates (Figure 23), education levels (Figure 36), unemployment (Figure 10), and most other socioeconomic indicators are related to health. In general, regions with the best social and economic conditions have the highest level of health. At first glance, the data in Figure 22 seem to contradict the findings of B.C. data and international studies that have shown a strong connection between income inequality and health. A recent analysis found that while the United States clearly shows the expected relationship between income distribution and mortality, Canada does not fit this pattern. It could be that our tax system and social programs are doing a good job in buffering the health effects of income inequality (Ross, Wolfson, Dunn, Berthelot, Kaplan, & Lynch, 2000; Statistics Canada, March 2000). However, this is the first time we have had regional data on income inequality in British Columbia, and more discussion will be needed to determine how this information can be interpreted and applied.

Figure 24 Income Inequality

Economic Families, B.C., 1989-1998



Average income of the richest and poorest 20 per cent of economic families. Market income is income before taxes and government transfers (Employment Insurance, Old Age Security, Child Tax Benefit, Social Assistance, etc.) Source: Statistics Canada. Income in Canada, 1998. Catalogue 75-202-XIE, Table 7.2.

Is the gap between the rich and poor widening? Based on market income (before taxes and transfers), the gap between the two ends of the income scale has been widening. Average incomes have been increasing for the wealthiest 20 per cent of families, while the lowest-income families earned less in 1998 than they did in 1989. The richest 20 per cent of B.C. families had an average income of $117,954 in 1998 – about 11 times more than the lowest income quintile families ($10,824). The social safety net – through tax credits, social assistance, and other government benefits – has helped to reduce the gap between the rich and the poor. After taxes and government transfers, high-income families received about $5 for every dollar the poorest families had. The after-tax income ratio of 5 to 1 has remained fairly stable for the past ten years (Figure 24).

What Targets are Achievable?

Since 1985, the proportion of B.C. children living in low-income families has fluctuated between 11 and 17 per cent. International rates provide an indication of what can be achieved in reducing poverty. In a survey of 23 wealthy countries, northern European countries were the most successful in keeping child poverty at a low rate. Sweden, Norway, Finland, and Denmark were in the "5 per cent club", having held child poverty rates at or below 5 per cent, even through times of economic recession and rising unemployment. Canada ranked 17 of 23 countries, with a rate of 15.5 per cent (UNICEF Innocenti Research Centre, 2000; Bradbury & Jantti, 1999).

What is the ideal level of income equality, in terms of population health? International studies have shown that in more egalitarian societies, people tend to live longer and have better health (Marmot & Wilkinson, 1999). Analyzing the results achieved by other industrial countries can provide some clues, but setting a target for British Columbia would require much more analysis and public discussion. What is clear, however, is that the decisions we make about the social safety net and other policies will help shape what happens to the gap between rich and poor in the future.

What Actions Can We Take?

Individuals and families can:

- Keep informed about the extent and impacts of poverty in British Columbia.
- Ask governments to enact policies and programs that will reduce poverty and inequalities.
- Participate in community programs designed to alleviate poverty and hunger.

Community groups can:

- Develop community-based programs that improve people's access to nutritious food. Some examples are community kitchens, community gardens, and School Meal Programs.

Governments can:

- Protect and improve social programs and tax policies that help to mitigate against inequalities in income. More equitable wage structures and progressive tax rates are examples.
- Develop long-term strategies for supporting lone-parent families, such as assisting lone-parents who wish to return to school or to upgrade their work skills.
- Index the Income Assistance support allowance to the cost of the Nutritious Food Basket and to the age and gender of family members.
- Continue current efforts to assist low-income people in accessing programs and services that are available. Where possible, policies and programs should include an access component, for example, access to public transport; grocery stores with fresh fruits and vegetables; libraries; and, opportunities for recreation, sports, and cultural activities.
- Continue to develop indicators to measure income inequality and its impact on health.

Objectives

- Increase the safety and security of communities throughout B.C., including:
  - increased sense of personal safety and mutual responsibility for safe communities, and.
  - reduced crime and interpersonal violence.
- Increase opportunities to develop positive and supportive interpersonal relationships and social networks, including:
  - access to organized and informal community-based sports, recreation, social, arts, and cultural activities;
  - opportunities and supports for voluntary activities; and,
  - access to self-help and mutual support activities.
- Increase opportunities and supports for healthy family functioning, including:
  - education and supports for effective parenting; affordable quality child care and other supports for working parents;
  - recognition and supports for unpaid family caregivers; and,
  - access to self-help and mutual support resources for families.

The support we get from others from birth throughout life is an important influence on health. In fact, connections to our family, friends, and communities may be as important to health as traditional factors such as blood pressure, smoking, and diet. The caring, respect, and satisfaction that occur in social relationships guard against illness and help people cope when problems do arise.

This section discusses social support and volunteering, two ways of measuring participation and social integration. Two additional measures – the crime rate and the number of children and youth in care – provide information about the levels of security and stress that families and communities are experiencing.

What Do the Data Show?

- Most British Columbians report high levels of social support.
- More people are volunteering and participating in their communities. A national survey found that almost one-third of British Columbians had performed volunteer work in the previous year.
- The crime rate has been declining since 1991.
- The number and rate of children in care has been rising steadily since 1994. These increases may reflect increased awareness and reporting of child welfare concerns. However, the growing rate of children and youth in care may also indicate that more families are having difficulties caring for their children.
- Based on rates of crime and children and youth in care, some areas of the province show much more community stress than others. Vancouver has the highest rate of serious crime; northern regions, Okanagan Similkameen, Central Vancouver Island, and Vancouver have the highest rates of children in care.

Social Support

Most British Columbians report high levels of social support, based on their responses to questions about having someone to confide in, someone they can count on in a crisis, someone they can count on for advice, and someone who makes them feel loved and cared for. Women are somewhat more likely to have high levels of social support than are men. The social networks available to people decrease with age, although a high level is still reported by almost four out of every five individuals age 65 and older (Table 5).

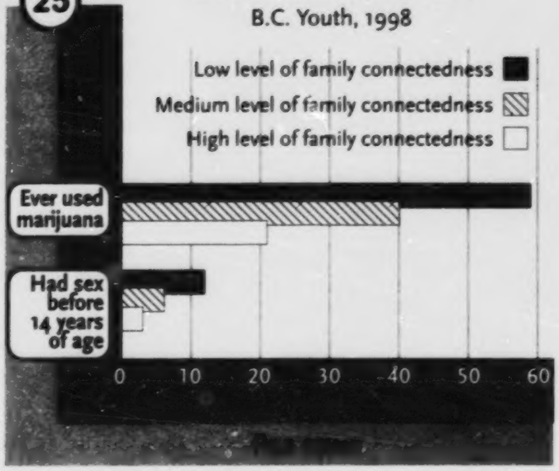
Table ⑤ High Level of Social Support, B.C.

Men	[illegible]
Women	[illegible]
Age 12 to 24 years	[illegible]
Age 25 to 44 years	[illegible]
Age 45 to 64 years	[illegible]
Age 65 and older	[illegible]

Per cent of population age 12 and older who report a high level of social support, based on their responses to four questions about having someone to confide in, someone they can count on in a crisis, someone they can count on for advice, and someone who makes them feel loved and cared for. Source: Statistics Canada. National Population Health Survey. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health.

Figure 25 Family Connectedness and Risk Behaviours

B.C. Youth, 1998



Source: Healthy Connections: Listening to BC Youth. Highlights from the Adolescent Health Survey II, p. 27. The McCreary Centre Society, 1999.

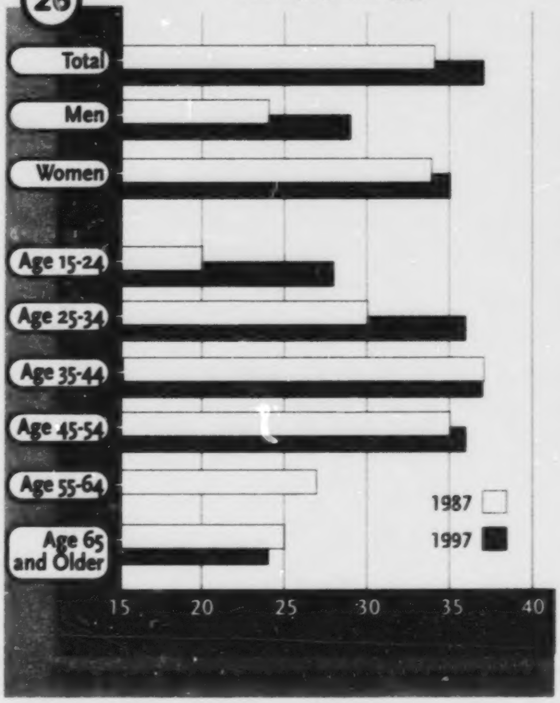
The recent *Adolescent Health Survey* found that most British Columbia youth have families, friends, or others in their lives who can help with personal problems. The *Survey* also provided insight into connectedness, a term used to describe how youth feel about their social environment, including their relationships with friends, family, and school. Students who were strongly connected to their families were less likely to engage in risky behaviours such as early and unprotected intercourse, smoking, and use of alcohol or illegal drugs (Figure 25). Students with a sense of belonging and involvement with school were also less likely to make choices that are dangerous to their health (The McCreary Centre Society, 1999). These findings fit with our understanding of what makes people healthy – supportive families, friends, and schools help young people make choices and take actions that will improve their health.

Volunteer Rate

More people are volunteering. A national survey in 1997 found that almost one-third of British Columbians had performed volunteer work in the previous year. This is an increase since the last survey in 1987, especially among younger volunteers (Figure 26).

Figure 26 Volunteer Participation Rate

B.C., 1987 and 1997

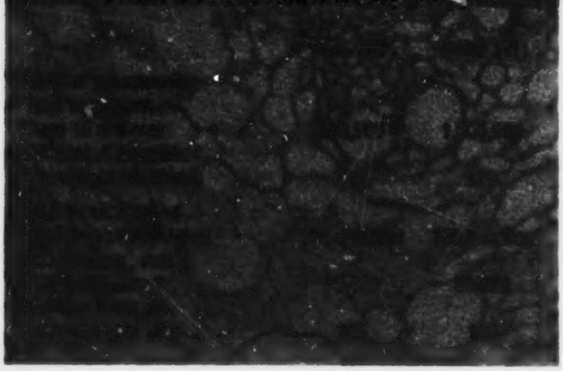


Sources: Ross, D.P., & Shillington, E.R. (1989, November). A Profile of the Canadian Volunteer: A Guide to the 1987 Survey of Voluntary Activity in Canada, p. 26. Ottawa: National Voluntary Organizations. Hall, M., et al. (1998, August). Caring Canadians, Involved Canadians: Highlights from the 1997 National Survey of Giving, Volunteering and Participating., p. 73. Statistics Canada Catalogue No. 71-542-XIE.

Volunteers contributed more than 169 million hours of their time during the year – the equivalent of 88,252 full-time year-round jobs (assuming 40 hours per week for 48 weeks) (Table 6). Compared to other provinces, British Columbia is about average for volunteering, with residents of the Prairie provinces having the highest rates. Within the province, a higher percentage of rural British Columbians volunteered than those who live in large urban areas. Volunteers in towns with 30,000 to 100,000 residents, e.g., Nanaimo, Chilliwack, contributed the highest average number of volunteer hours during the year (Saunders, 2000).

Rates of volunteering are often used as an indicator of civic vitality (Advisory Committee on Population Health, 1999; Canadian Council on Social Development, 1999). Volunteering fosters community integration and cohesion by encouraging friends, colleagues, and neighbours to work together through the sharing of a common concern. Societies with a high level of civic participation and trust have a higher level of population health, although the exact mechanisms are not well understood (Kawachi, Kennedy, & Glass, 1999).

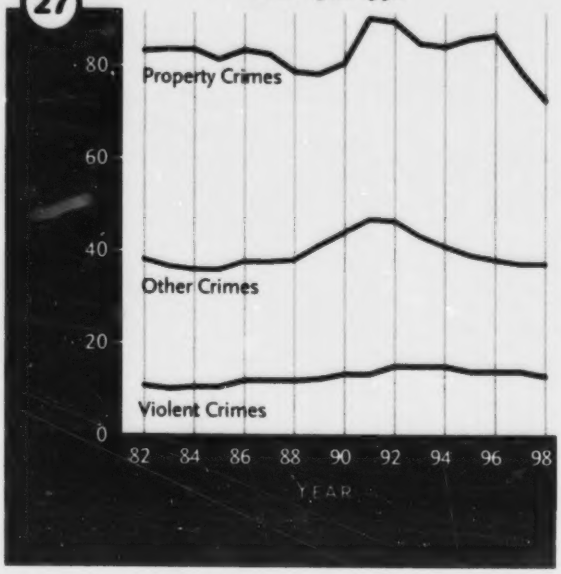
Table 6 Rate of Volunteering and Hours Volunteered, B.C.



** Assuming 40 hours per week for 48 weeks.*

Sources: [1] Ross, D.P., & Shillington, E.R. (1989, November). A Profile of the Canadian Volunteer: A Guide to the 1987 Survey of Voluntary Activity in Canada, p. 26. Ottawa: National Voluntary Organizations. [2] Hall, M., et al. (1998, August). Caring Canadians, Involved Canadians: Highlights from the 1997 National Survey of Giving, Volunteering and Participating., p. 73. Statistics Canada Catalogue No. 71-542-XIE.

Figure 27 Crime Rate
B.C., 1982-1998



Source: Police Services Division, B.C. Ministry of Attorney General, 1999. Police and Crime Summary Statistics 1989-1996 p.29

Crime Rate

In British Columbia, as in most other provinces, the crime rate has been declining since 1991 (Figure 27). Property crimes – breaking and entering and theft – represent the majority (59 per cent) of criminal offences. About 11 per cent are violent crimes, which include homicide, attempted murder, sexual and non-sexual assault, robbery, and abduction. About 30 per cent are other crimes – vandalism, disturbing the peace, weapons possession, and trespassing. These proportions have remained about the same over the past decade.

What do the declining rates in Figure 27 mean? It could be that fewer crimes are being committed, and that British Columbia is becoming a safer place to live. However, many experts believe that a number of factors are contributing to the declining rates. Firstly, crime rates are not "age-adjusted". Most crimes are committed by males in their late teens or early twenties. Because our population is aging, we would expect the crime rate to decline. Secondly,

Table

5 High Level of Social Support, B.C.

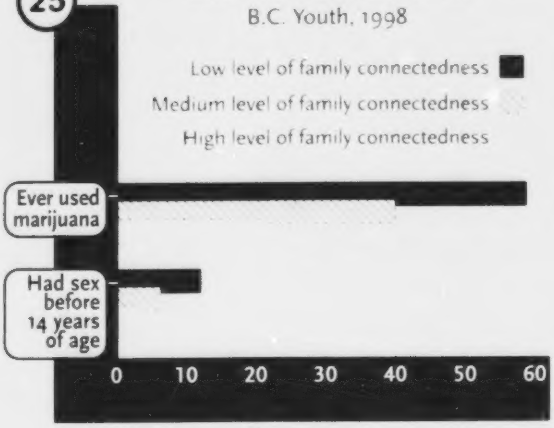
	1996-97
Men	85%
Women	89%
Total	**87%**
Age 12 to 24 years	92%
Age 25 to 44 years	90%
Age 45 to 64 years	84%
Age 65 and older	78%

[illegible] Survey [illegible] Planning and Evaluation, B.C. Ministry of Health

Figure 25

Family Connectedness and Risk Behaviours

B.C. Youth, 1998



PER CENT

Source: Healthy Connections: Listening to BC Youth. Highlights from the Adolescent Health Survey II, p. 27. The McCreary Centre Society, 1999.

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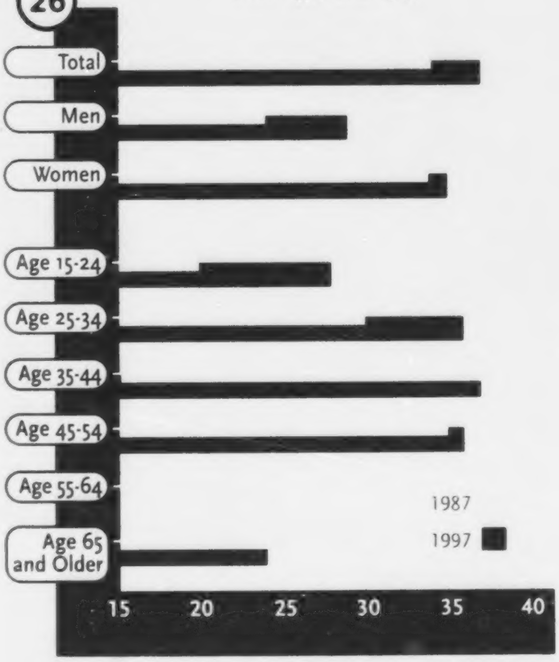
More people are volunteering. A national survey in 1997 found that almost one-third of British Columbians had performed volunteer work in the previous year. This is an increase since the last survey in 1987, especially among younger volunteers (Figure 26).

Figure 26

Volunteer Participation Rate

B.C., 1987 and 1997



PER CENT WHO VOLUNTEERED IN PAST YEAR

Sources: Ross, D.P., & Shillington, E.R. (1989, November). A Profile of the Canadian Volunteer: A Guide to the 1987 Survey of Voluntary Activity in Canada, p. 26. Ottawa: National Voluntary Organizations. Hall, M., et al. (1998, August). Caring Canadians, Involved Canadians: Highlights from the 1997 National Survey of Giving, Volunteering and Participating., p. 73. Statistics Canada Catalogue No. 71-542-XIE.

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Table ⑥ Rate of Volunteering and Hours Volunteered, B.C.

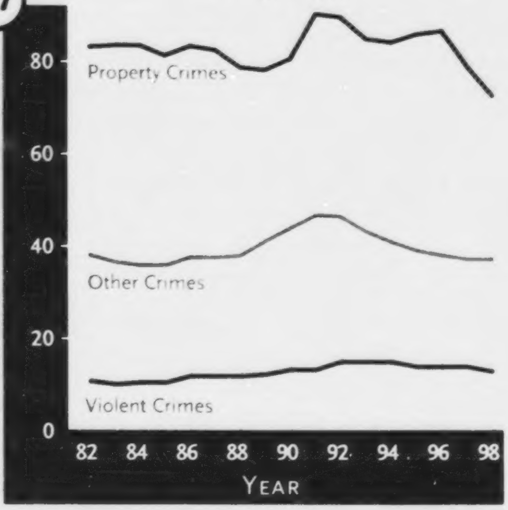
	1987 [1]	1997 [2]
Rate of volunteering		
Total volunteers, age 15 and over	659,900	1,055,980
Per cent of population who were volunteers	29%	32%
Hours volunteered		
Total hours volunteered	135.0 million	169.4 million
Full-time year-round job equivalence*	70,313	88,252
Average hours per volunteer per year	205	169

*Assuming 40 hours per week for 48 weeks

Sources: [1] Ross, D.P. & Shillington, E.R. (1989, November). A Profile of the Canadian Volunteer: A Guide to the 1987 Survey of Voluntary Activity in Canada. p. 26. Ottawa: National Voluntary Organizations. [2] Hall, M., et al. (1998, August). Caring Canadians, Involved Canadians: Highlights from the 1997 National Survey of Giving, Volunteering and Participating. p. 73. Statistics Canada Catalogue No. 71-542-XIE

Figure ㉗

Crime Rate
B.C., 1982-1998



Source: Police Services Division, B.C. Ministry of Attorney General, 1999. Police and Crime Summary Statistics 1989-1998 p.29

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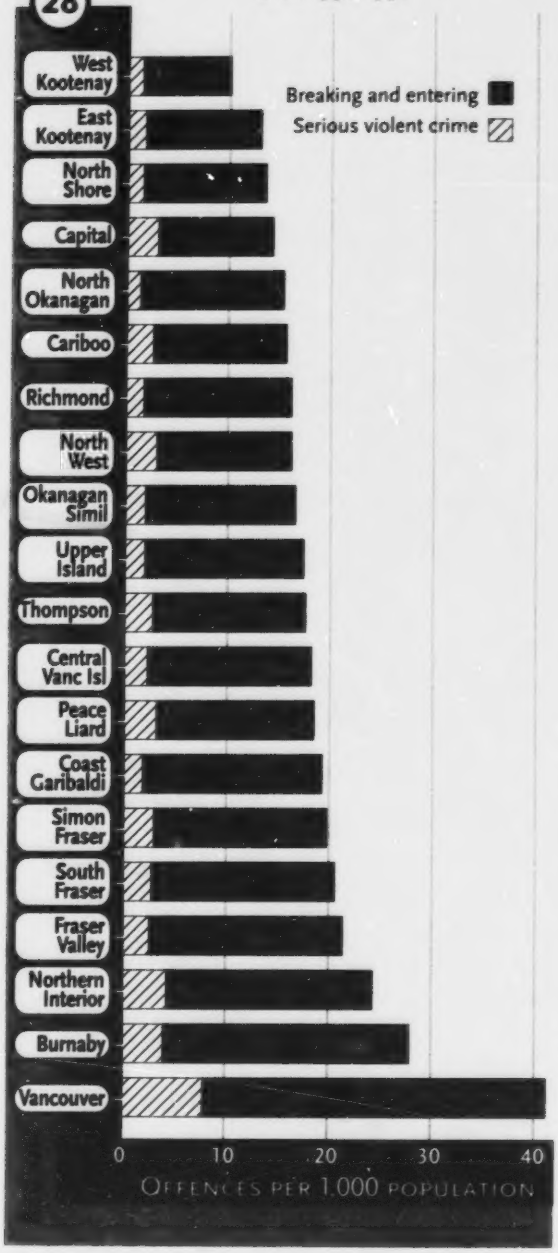
What do the declining rates in Figure 27 mean? It could be that fewer crimes are being committed, and that British Columbia is becoming a safer place to live. However, many experts believe that a number of factors are contributing to the declining rates. Firstly, crime rates are not "age-adjusted". Most crimes are committed by males in their late teens or early twenties. Because our population is aging, we would expect the crime rate to decline. Secondly, unemployment rates have been declining in recent years, and more employment typically leads to reduced crime. A third explanation is that fewer crimes are being identified and reported, due to cut-backs in the number of police or due to citizens' increased reluctance to report.

Crime rates vary, sometimes dramatically, by community. To minimize differences that might be due to reporting minor infractions, one can look at "serious crimes", a subset that includes most violent crimes, as well as breaking and entering. For all crimes, rates are traditionally highest in the north. For serious crimes, Vancouver, Burnaby, and Northern Interior have the highest rates (Figure 28).

Figure ㉘

Serious Crime

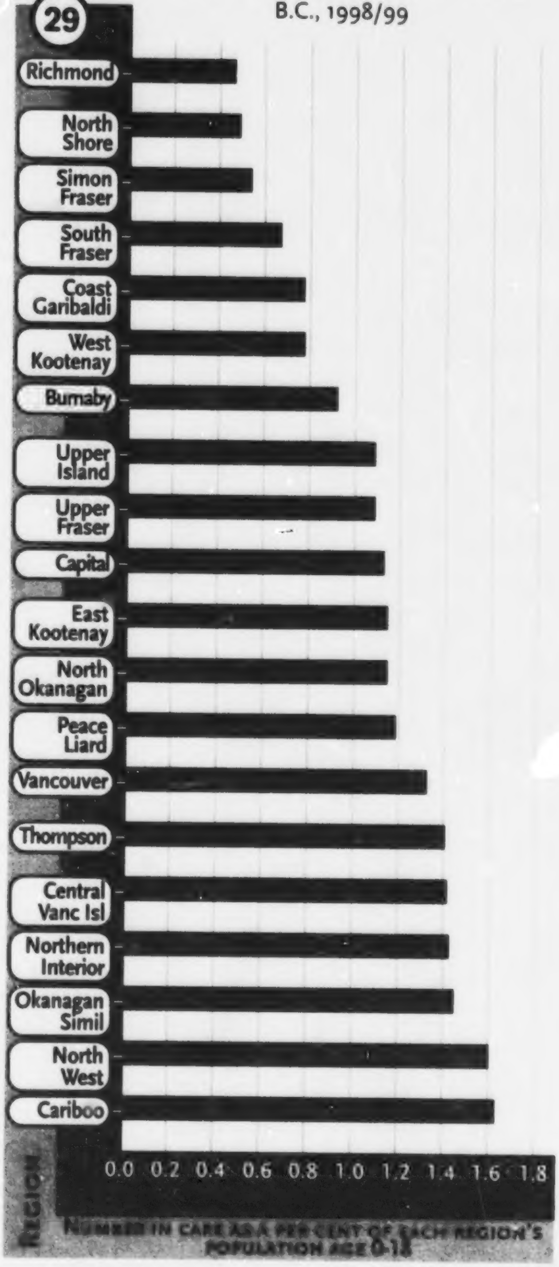
B.C., 1996-1998



Serious violent crime includes all crimes involving a weapon as well as sexual assaults resulting in bodily harm, non-sexual assaults resulting in serious injury, and abductions. Breaking and entering is a subset of property crime.
Source: Police Services Division, B.C. Ministry of Attorney General. Unpublished tables.

Figure 29 Children and Youth in Care

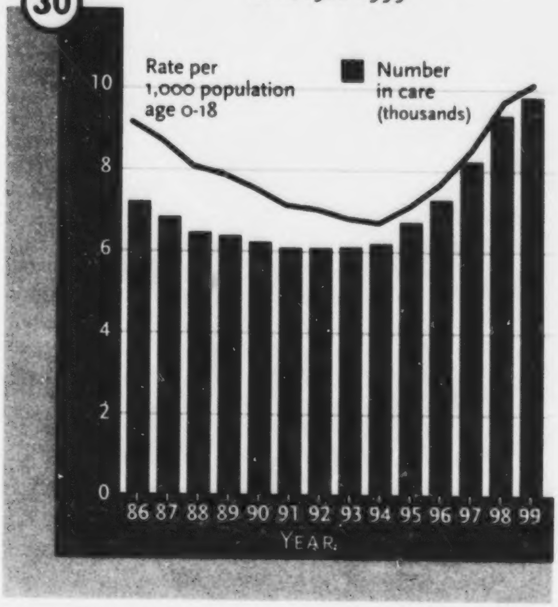
B.C., 1998/99



Children and youth in the care of child welfare agencies, as a per cent of each region's population age 0 to 18. Based on average month-end count for the fiscal year 1998/99. Source: B.C. Ministry for Children and Families, Program Management and Audit Branch. Unpublished tables, March 2000.

Figure 30 Children and Youth in Care

B.C., 1986-1999

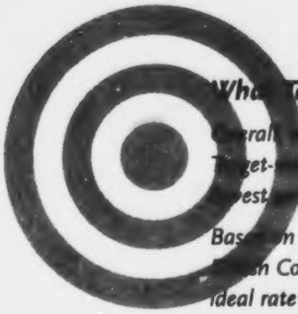


Children and youth who are in the care of child welfare authorities, number and rate per 1,000 population age 0-18. Figures are as of March 31 each year. Source: B.C. Ministry for Children and Families and BC STATS population estimates.

Children and Youth in Care

In 1999, there were approximately 9,800 children and youth in care at any point in time – about 1 per cent of British Columbia's population under age 19. The northern areas of the province, Okanagan-Similkameen, Central Vancouver Island, and Vancouver have the highest rates of children and youth in care (Figure 29).

The number and rate of children in care has been rising steadily since 1994 (Figure 30). British Columbia is not the only jurisdiction to show this trend. A national survey found that five of the six other provinces that were able to provide statistics had also shown an increase in children in care over this time period (Canadian Council on Social Development, 1999).



What Targets Are Achievable?

Overall, most British Columbians report having access to a high level of social support. Target-setting could focus on improving the level of support available to groups that have the lowest percentages on this measure, such as single parents and seniors.

Based on the 1997 survey on volunteering, we know that a large and growing number of British Columbians are actively involved in their communities. We do not know what the ideal rate of volunteering might be. However, the survey provides a database for studying the ways in which people volunteer and the factors that help and hinder people's ability to participate. This could provide insight into possible targets and approaches.

The overall crime rate is subject to reporting difficulties, which makes it difficult to know what level we could aim to achieve. It may be more meaningful to set targets for reducing violent and other serious crimes, because data can be more consistently collected. Data in Figure 28 provide a baseline – a provincial rate of 21.6 serious crime offences per 1,000 population.

In a perfect world, all children and youth would grow up in stable and nurturing families, and the need for child welfare authorities to intervene would be minimal. When protection, special care, or substitute parenting is required, we should aim to ensure that children and youth in care achieve the best possible outcomes in terms of their health and quality of life. Currently, the Ministry for Children and Families, the Children's Commission, and the Provincial Health Officer are working together to develop a set of key indicators for measuring the health of children and youth, including those in care. Indicators are also under development nationally through the Canadian Round Table on Child Welfare Outcomes. Once there is consensus on the best measures to use in British Columbia, information systems may need to be revised – or new methods developed – to collect the necessary information. As databases on children and youth in care are improved, we will be able to learn more about the health status of this vulnerable group, and to identify areas that could be targeted for improvement.

What Actions Can We Take?

Individuals and families can:

- Encourage a climate of zero tolerance for violence in all areas of society.
- Participate in community decisions and activities.

Employers can:

- Adopt family-friendly policies that allow parents to spend time with their families.
- Adopt policies that support employees' participation in voluntary activities.
- Design workplaces so that people have opportunities to interact with one another.

Governments can:

- Provide seed money for social development, such as healthy communities projects, recreational and cultural activities.
- Address the underlying factors that put people at risk of turning to crime and violence, including poverty, inadequate housing, inequality, racism, family breakdown, child abuse and neglect, school failure, and high rates of unemployment.
- Provide outreach programs that identify and help families who are isolated, disadvantaged, or showing signs of distress.
- Develop data and information systems to track outcomes such as illness and death rates for children and youth who are or have been in care.

Objectives

- Increase access to affordable housing that meets household needs, with reasonable choice in tenure, building type, and location, including:
  - affordability of home ownership for first time buyers;
  - sufficient amount and variety of moderately priced rental housing; and,
  - affordable and accessible housing options for individuals with low incomes or other special needs.
- Increase the range of secure housing options and housing stock for people who are homeless or at risk of homelessness.
- Improve and maintain the design of communities to ensure quality of life for residents, including:
  - accessible public places for all persons;
  - appropriate transportation infrastructure, including public transportation; and,
  - neighbourhoods with appropriate access to services and amenities required for health, security and stability, and protection from hazards that harm quality of life.

Housing and the design of roads, neighbourhoods, public buildings, and other community structures affect health and quality of life in several ways. As physical shelter, our homes and other buildings keep us warm and dry. Structures that are cold, damp, or in poor repair can contribute directly to disease or injury. Housing that is too small or overcrowded contributes to family stress, with insufficient space for children to play or study.

Housing and community design also influence our opportunities for work, recreation, and social interactions. We have few provincial data with which to measure the design of communities and its impact on quality of life. There are, however, some well-established measures of housing need.

What Do the Data Show?

- In spite of efforts to build social housing and other solutions, it is difficult to keep pace with housing problems. One-third of renter households are having problems obtaining suitable, adequate, and affordable housing.
- Low-income families, seniors, and persons with mental illness or other special needs are groups that experience the greatest housing problems.
- Research is under way to develop a profile of homelessness in British Columbia and to find ways to tackle this growing problem.

Housing Need

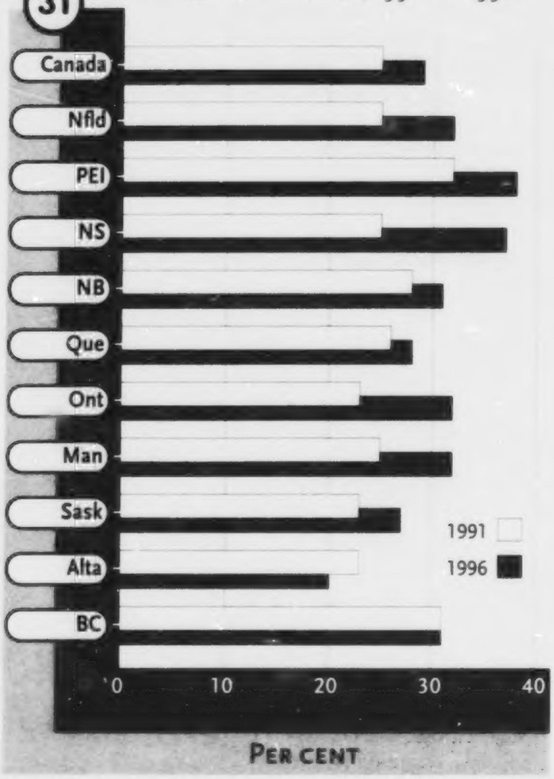
According to the Core Housing Need index, about 153,000 renter households – almost one-third of renter households in British Columbia – were unable to afford suitable, adequate, and affordable housing in 1996. Renters in "housing need" were spending an average of 50 per cent of their income on rent.

Housing represents the largest monthly expenditure for most households. If that cost consumes too much of the available income, a family faces several difficult choices: sacrifice the budget for food, clothing, or other necessities, share housing with other individuals or families, or work longer hours to cover the housing cost. Any of these alternatives may lead to poor health. The final alternative is homelessness.

British Columbia is not the only jurisdiction to experience housing problems. Across Canada, between one in three and one in five households are in housing need. These proportions rose sharply between 1991 to 1996, except in British Columbia and Alberta (Figure 31).

Figure 31 Renters in Housing Need

Canada and Provinces, 1991 and 1996



Per cent of renter households who were unable to afford suitable and adequate housing, based on the Core Housing Need index developed by the Canadian Mortgage and Housing Coporation (CMHC). Source: CMHC using data from the 1991 and 1996 HIFE data collected by Statistics Canada. In National Housing Policy Options Paper: A Call for Action. Federation of Canadian Municipalities, June 1999.

British Columbia is one of the few provinces that have continued to fund the development of new affordable housing. However, British Columbia is one of the fastest growing areas in North America. Even with strong provincial and local efforts, social housing programs will have difficulty keeping pace with increasing housing need. BC Housing, the province's housing agency, currently has about 10,500 people on its wait list. Low-income families, seniors, and persons with mental illness and other special needs are groups that face the most pressing housing problems.

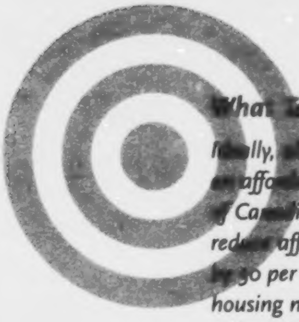
Homelessness

The term "homeless" includes people living in the streets with no physical shelter, and also people living in spaces that do not meet basic health and safety standards.

No one knows for sure how many homeless people there are. The number of homeless people living on Vancouver's streets is estimated at 600 to 1,000. In addition, there are increasing numbers of individuals who are homeless in Greater Vancouver's suburban municipalities and in smaller cities such as Victoria, Nanaimo, Prince George, Kelowna, and Kamloops. An additional 14,000 individuals live in substandard hotel rooms and rooming houses throughout the province. Tenants in these "single room occupancy" hotels often pay more than 50 per cent of their income in rent, and they do not have cooking facilities or private bathrooms. Tenants are provided with security of tenure under the *Residential Tenancy Act*, but many of the single room occupancy hotels they use are disappearing.

Poverty, mental illness, developmental disabilities, alcohol and drug abuse, and lack of access to affordable housing are some of the causes of homelessness. The provincial government has initiated a major research project to develop a better understanding of homelessness in British Columbia, to compare our situation with other jurisdictions, and to find ways to tackle the problem. Partners in this project include BC Housing, the Vancouver/Richmond Health Board, and the City of Vancouver.

For persons with mental illness, a recent report by the Mental Health Advocate identifies some of the housing concerns and specific actions to address them (Mental Health Advocate, 2000).



What Targets Are Achievable?

Ideally, all British Columbians should have access to adequate and appropriate housing at an affordable cost, and this should be our long-term goal. A recent report by the Federation of Canadian Municipalities proposes some targets at the national level, including a target to reduce affordability problems (in terms of rent exceeding 30 per cent of household income) by 50 per cent over a 10-year period (Federation of Canadian Municipalities, 1999). However, housing needs vary from community to community. Responses, strategies, and targets need to be tailored to community needs and problems.

Mental health planning guidelines indicate that at least 30 of every 10,000 adults (age 16-64) in the general population will require some form of residential care, supported housing, or rent subsidy as a result of their mental illness. For British Columbia, this represents an estimated 8,200 individuals needing housing support of some type. In 1999, 4,905 housing spaces were available within the community mental health system – a shortfall of 3,300 spaces.

What Actions Can We Take?

Governments and community groups can:

- Recognize the importance of housing as a determinant of health for individuals and communities.
- Expand provincial and local efforts to help people who are homeless or in housing need. In particular, increase the availability of housing for persons with mental illness and other special needs.

Individual Capacities, Skills, and Choices

Goal 2: Opportunities for all individuals to develop and maintain the capacities and skills needed to thrive and meet life's challenges and to makes choices that enhance health.

Health Goal 2 is about the abilities, skills, attitudes, and behaviours that we are born with or that we develop throughout life.

Our problem-solving and coping skills, sense of identity, abilities to communicate and participate in daily life, commitment to life-long learning, and the lifestyle choices we make are key influences on our physical, mental, and social health. These personal abilities and characteristics are shaped during early childhood and are further influenced by the environments in which we live and work.

Goal 2 includes the following issues:

- healthy child development
- learning opportunities
- making healthy lifestyle choices
- opportunities for independent living

Objective

- Improve and maintain supports to ensure all young children receive the best possible start in life, including:
  - appropriate prenatal and postnatal care;
  - effective early childhood nurturing and parenting; and,
  - appropriate early childhood stimulation, socialization, and education.

Childhood is a critical period, that profoundly affects growth and development throughout life. Research has shown that early childhood – the years from before birth through age five – is especially important, because it provides the foundation for the school years and beyond. During these early years, children acquire the sense of identity, the ability to learn, social and coping skills, and the trust and relationships they need to lead healthy and productive lives.

Several recent publications have profiled the health and well-being of children and youth. In British Columbia, reports released in 1999 include the second edition of *Measuring Our Success* (B.C. Ministry for Children and Families, 1999) and results of the *Adolescent Health Survey II* (The McCreary Centre Society, 1999). *Measuring Our Success* contains over 100 indicators and benchmarks on child and family well-being, with updates to many of the indicators that appeared in the Provincial Health Officer's 1997 report on child health. The *Adolescent Health Survey* tells us about the health and risk behaviours of B.C. youth today, and how the health of youth has changed since the first Adolescent Health Survey in 1992.

On a national level, 1999 publications included *The Progress of Canada's Children into the New Millennium* (Canadian Council on Social Development, 1999) and Health Canada's Measuring Up. Also in 1999, data became available from the 1996-97 cycle of the *National Longitudinal Survey of Children and Youth*. This major survey, developed jointly by Human Resources Development Canada and Statistics Canada, provides an information base for learning more about children and the conditions that influence their development, both positively and negatively.

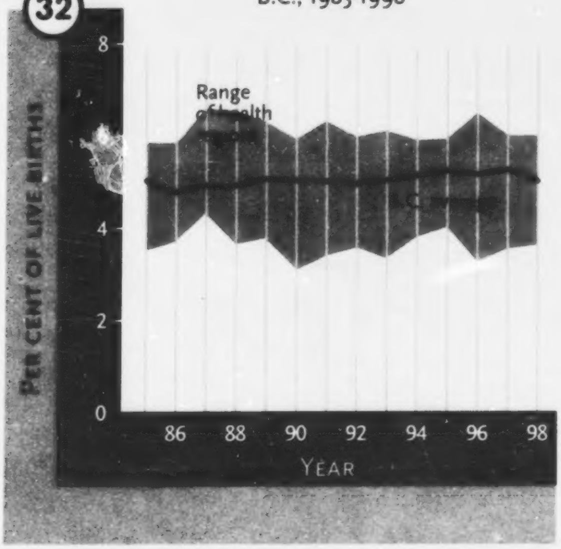
The following section presents only a few of the many measures that can be used to monitor the physical, mental, and emotional growth and development of young children: low birth weight, breastfeeding rates, the extent to which family are functioning well, and school readiness. For additional indicators and discussion on healthy child development, readers may wish to consult the publications mentioned above. More complete references may be found in Appendix B.

What Do the Data Show?

- Most children are growing up healthy and emotionally well-balanced.
- About 5 per cent of babies are born with a low birthweight, and this rate has not changed much in the past 15 years.
- Although most babies are initially breastfed, only 30 to 40 per cent are breastfed for 4 to 6 months, as recommended for optimal growth and development.
- About 7 per cent of families are having difficulty functioning, based on a series of questions about how well the family works together.
- Readiness for school is an important indicator of the care and stimulation being provided to young children. Federal and provincial groups are working together to find practical ways to measure school readiness at provincial and local levels.

Figure 32 Low Birthweight Rate

B.C., 1985-1998



Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Low Birthweight

In British Columbia, about 5 per cent of babies have a low birthweight, and this rate has been quite steady for the past 15 years (Figure 32). Mothers who are in the oldest (age 45 and older) and youngest age groups (under age 15) have the highest rates of low birthweight babies, but low birthweight occurs in all age groups. Regionally, the highest low birthweight rates occur in Vancouver and Burnaby (5.7 per cent), based on data for the five-year period 1994 to 1998.

Smoking by the mother during pregnancy, lack of nourishment in the mother's womb, pregnancy-induced hypertension, and multiple births are some of the known causes of low birthweight. Poverty, low education levels, birth order, and ethnicity are also related to low birthweight. About two-thirds of low birthweight babies are pre-term (born too early, before the 37th week of pregnancy). The cause of most pre-term births is unknown, and this is an area that requires more study.

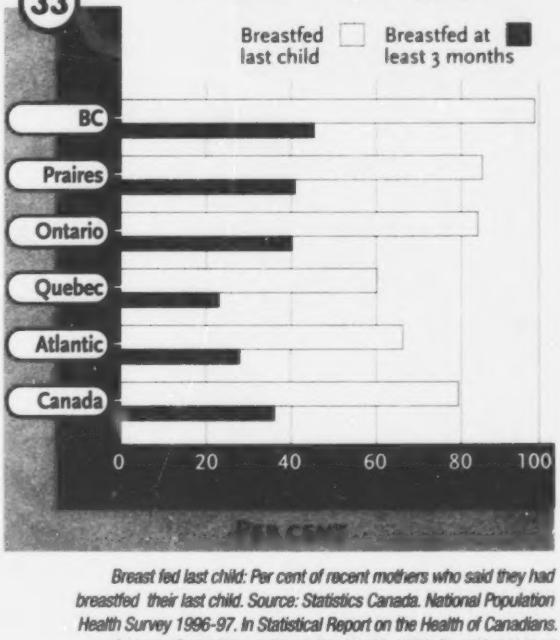
Breastfeeding

Breastfeeding has increased since the 1980s when only about two-thirds of women breastfed their babies. British Columbia mothers achieve considerably higher rates for breastfeeding than the Canadian average. In the *National Longitudinal Survey of Children and Youth*, 88 per cent of B.C. children under age two had been breastfed, compared to 77 per cent for Canada overall. The *National Population Health Survey* found that almost all recently pregnant women (98 per cent) had breastfed their last child – the highest rate in Canada (Figure 33).

Although most babies are initially breastfed, most are not receiving breast milk for the recommended period of time, which is exclusive breastfeeding for the first four to six months, with breastfeeding continuing into the baby's second year. Fewer than half (46 per cent) of all babies are breastfed for three months or more, and local studies from around the province show that by six months of age, only about 30 per cent of babies are breastfed.

Figure 33 Breastfeeding

Canada and Provinces, 1996-97



Breast fed last child: Per cent of recent mothers who said they had breastfed their last child. Source: Statistics Canada. National Population Health Survey 1996-97. In Statistical Report on the Health of Canadians. Advisory Committee on Population Health, 1999. Breastfed at least 3 months: Percent of infants age 3 months to 3 years who were currently breastfed or who had been breastfed for at least three months. Source: Human Resources Development Canada and Statistics Canada. National Longitudinal Survey of Children and Youth 1996-97. Unpublished tables.

One way to increase the breastfeeding rate is for hospitals, workplaces, and public places to become more baby-friendly and mother-friendly. The international Baby-Friendly Hospital campaign has recently been launched in Canada. So far, only one hospital in Canada (in Quebec) has achieved official Baby-Friendly designation, but many British Columbia hospitals are taking steps towards eligibility.

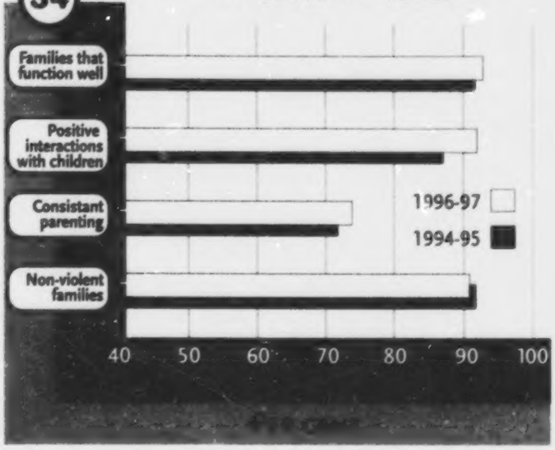
Family Functioning

Most children live in families that are functioning well, and this improved slightly between 1994-95 (92 per cent) and 1996-97 (93 per cent). Most parents also reported positive parenting behaviours such as praise, talking, playing, and laughing together. The majority said that they tried to be consistent in the ways they parented and disciplined their children, and that they maintained non-violent homes (Figure 34). In family functioning, there was not much difference among the provinces, with results ranging from 91 to 94 per cent for healthy functioning in 1996-97.

While the vast majority of B.C. families were reported to function effectively, the remaining 7 percent were having difficulty, to the point that long-term problems for the children could be anticipated.

Figure 34 Family Health & Well-Being

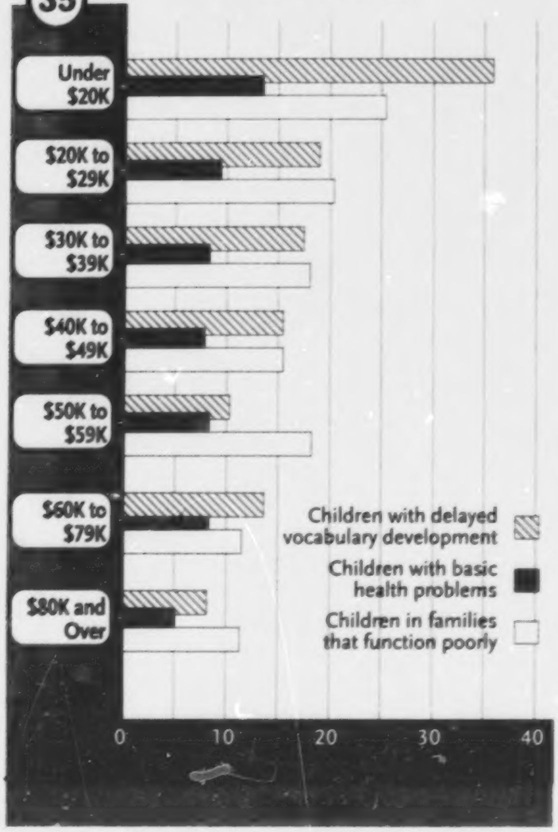
B.C., 1994-95 and 1996-97



Per cent of children age 0-11 living in families that are functioning well, based on a series of questions about how well the family works together. Per cent of children age 2 to 11 whose parents indicate they have positive interactions, consistent parenting practices with their children, and that their children never see adults or teens in the house physically fighting, hitting, or otherwise trying to hurt others. Source: National Longitudinal Survey of Children and Youth. Prepared for the B.C. Ministry for Children and Families by the Canadian Council on Social Development.

Figure 35 Income and Children's Health

Canada 1994-95



Per cent of children age 4 to 11 in two-parent families whose families are having difficulty functioning, based on responses to a series of questions about how well the family works together. Per cent of children age 4 to 11 in two-parent families who have health problems related to vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain and discomfort. Per cent of children age 4 to 5 years in two-parent families who scored less than 85 on the Peabody Picture Vocabulary Test scale. Human Resources Development Canada and Statistics Canada's National Longitudinal Survey of Children and Youth 1994-95. Prepared by the Canadian Council on Social Development. Income and Child Well-being: A New Perspective on the Poverty Debate, D.P. Ross & P. Roberts. http://www.ccsd.ca/pubs/inckids

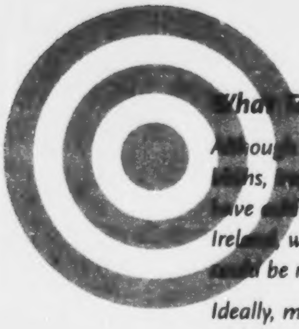
School Readiness

According to the *National Longitudinal Survey of Children and Youth (NLSCY)*, most (85 per cent) B.C. children are ready for school, based on the Peabody Picture Vocabulary Test. This figure is at the Canadian average (because of the scoring method, we would expect 85 per cent of children to be at or above the normal range), and has increased since the 1994-95 survey, when B.C.'s result (81 per cent) was below the national average.

Canadian data from the same survey show that low income, low levels of parents' education, and living in an unsafe neighbourhood put children at a disadvantage. Nearly one-third (32 per cent) of children whose mothers had not completed high school had low verbal scores, and 18 per cent had scores indicating behaviour problems, compared to 13 and 14 per cent of children whose mothers had more than a post-secondary education (Kohen, Hertzman, & Brook-Gunn, 1998).

Low income is related to a variety of child health outcomes, including school readiness. One national study looked at 27 elements of child development such as math and vocabulary scores, family functioning, neighbourhood safety, aggression, health status, and participation in cultural and recreation activities. This study found that the level of family income plays a crucial role in the child development process. In 80 per cent of the variables examined, the risks of negative outcomes and the likelihood of poor living conditions were noticeably worse for children living in families with annual incomes below $30,000 (Ross and Roberts, 1999). Figure 35 illustrates the income differences on three of those measures, including delayed school readiness, as measured by verbal development.

The primary objective of the *National Longitudinal Survey of Children and Youth* is to develop a national database on the characteristics and life experiences of children and youth in Canada. Because the sample size in individual provinces is fairly small (about 2,000 B.C. children were surveyed in 1994-95), the survey is not able to produce detailed statistics on school readiness in British Columbia children or to show how readiness differs among groups or regions within the province. However, federal and provincial groups are working together to find practical ways to measure school readiness at the provincial and local levels, as part of the National Children's Agenda.



What Targets Are Achievable?

Although we do not yet have the knowledge to prevent all pre-term and low birthweight births, improvements on both these measures are possible. Some British Columbia regions have achieved low birthweight rates below 4 per cent, comparable to Finland, Sweden, and Ireland, which have the best international rates. This suggests that British Columbia's rate could be reduced to 4 per cent.

Ideally, most or all babies should be exclusively breastfed for the first four to six months of life, with breastfeeding continuing into the baby's second year. However, with only 30 to 40 per cent of babies currently being breastfed for this length of time, we still have a long distance to go in meeting the World Health Organization recommendation. A more achievable short-term target would be to work towards continued increases from the current level, and to aim for a breastfeeding rate of around 80 per cent in the longer term.

Family functioning is a relatively new measure, and we lack sufficient knowledge on which to propose a target at this time. With regard to school readiness, we should aim to improve the scores of the lower-scoring groups of children, such as those from low and moderate income families.

What Actions Can We Take?

Parents and caregivers can:

- Be warm, loving, and responsive to children. Talk, sing, and read to your child.
- Recognize that each child is unique.
- Choose quality child care and stay involved.

Employers can:

- Promote family-friendly workplace policies that allow parents to spend time with their children.

Governments and organizations can:

- Make high-quality child care and other early childhood services accessible to all children, without financial barriers. Provide targeted programs for children living in disadvantaged families and neighbourhoods.
- Address the needs of young children in a coordinated, comprehensive manner, so that children and families do not fall through the cracks.
- Provide prenatal outreach services to the estimated 10 per cent of women who are at risk of low birthweight and other poor pregnancy outcomes.
- Introduce an effective program to identify pregnant women who smoke and to provide smoking cessation services.
- Encourage all maternity hospitals to follow international guidelines for breastfeeding and to work towards achieving Baby-Friendly designation. Encourage local health authorities to measure and report on performance against these standards.
- Utilize emerging research on resiliency factors and critical periods of development in planning programs and services.
- Establish comprehensive assessment points in the early childhood period. Routinely assess all children for school readiness and provide these data on a regional basis, so that parents are aware of progress in the provision of good care in early childhood.
- Tackle the larger issues that affect children's health and development — poverty, food security, and social conditions of disadvantaged groups.

Objectives

- Improve and maintain the skills and personal characteristics British Columbians need to participate fully in the social, cultural, and economic life of the province, through learning opportunities and supports to develop:
    - a sense of personal effectiveness, self-reliance, and self-esteem;
    - skills for acquiring knowledge, thinking critically, solving problems, making informed decisions, communicating effectively, managing life events, and coping with stress;
    - awareness of individual rights and a capacity to exercise. personal responsibilities as members of society; and,
    - a commitment to life-long learning.
- Improve and maintain the skills and capacities of British Columbians to find productive employment in a competitive labour market, including:
    - appropriate employment competencies for youth and young adults, developed within a flexible, accessible formal education system; and,
    - capacity of those in the workforce to adapt and respond to changes in skill requirements and labour market demands, through access to education and training opportunities throughout adult life.

Learning opportunities, both formal and informal, equip us with the knowledge and skills we need to participate fully in social, cultural, and economic life. To assess the learning opportunities available to British Columbians, we are interested in the overall learning environment in communities, as well as the development of specific skills in youth. To capture these concepts, the following section presents indicators that measure the educational attainment of the population and the academic achievement of Grade 12 students. For a more comprehensive set of educational indicators, readers may refer to the annual report published by the B.C. Ministry of Education, http://www.bced.gov.bc.ca.

What Do the Data Show?

- In general, regions with the highest levels of education have the best health status, while those with less education have poorer health.
- Some groups of students — Aboriginal students and those in low-income families in particular — are lagging behind in school participation and academic performance.

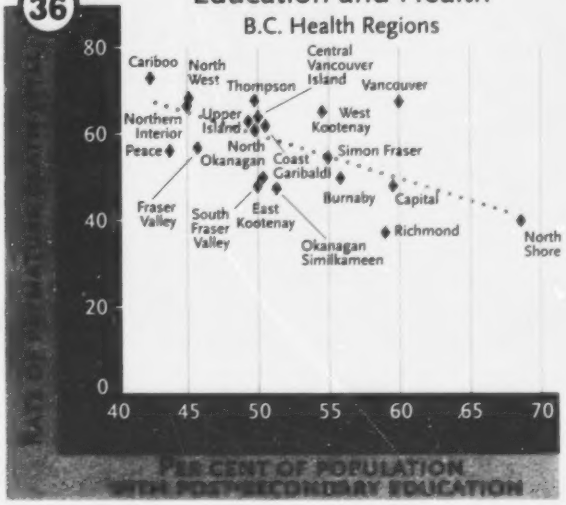
High School Graduation
Post-Secondary Graduation

More than three-quarters (77 per cent) of British Columbians age 25-54 have completed high school, and over half (54 per cent) have a post-secondary certificate, diploma, or degree of some type, based on the Census questions that ask people about their educational attainment.

Educational levels are rising. In the 1996 Census, there were more people with university degrees (401,720, age 15 and over) than people with less than Grade 9 education (218,780). Ten years earlier, in the 1986 Census, those with less than Grade 9 education outnumbered university graduates.

Figure 36 Relationship Between Education and Health

B.C. Health Regions



Education: Per cent of population age 25-54 with a post-secondary certificate, diploma, or degree, 1996. Source: Statistics Canada. 1996 Census. Prepared by BC STATS, Ministry of Finance and Corporate Relations. Health: Premature deaths, as measured by Potential Years of Life Lost before age 75, expressed as a rate per 1,000 population (age standardized), 1994-1998. Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

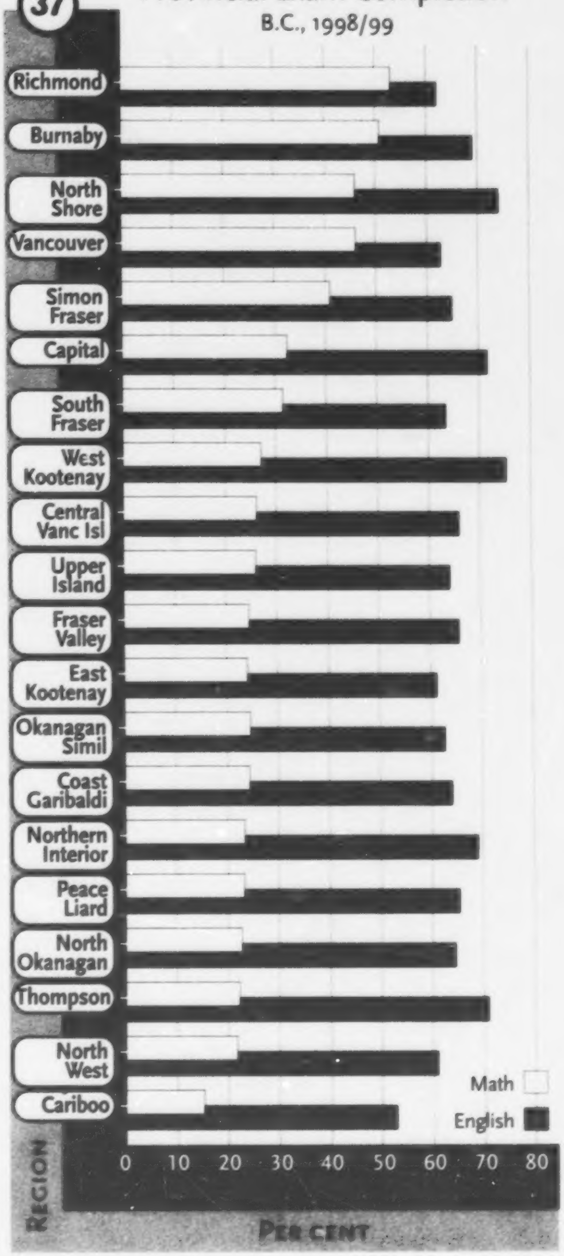
Within the province, there are large regional differences in levels of schooling. North Shore residents have the highest levels of attainment (90 per cent for high school and 68 per cent for post-secondary), while residents of northern areas of the province are less likely to complete these levels of formal schooling. In general, regions with the highest levels of education have the best health status, while those with less education have poorer health. Residents of Cariboo, which has the lowest level of post-secondary education, are much more likely to die at an earlier age than are residents of North Shore (Figure 36).

Grade 12 Exam Completion Rate

For B.C. students overall, two-thirds (66 per cent) took and passed the provincial English 12 exam, and one-third (35 per cent) completed the Mathematics 12 exam in 1998/99. As with educational attainment, there was considerable regional variation, especially in those who took and passed the Mathematics 12 exam; regional rates ranged from 17 per cent in Cariboo to 54 per cent in Richmond (Figure 37).

Figure 37 Grade 12 Provincial Exam Completion

B.C., 1998/99

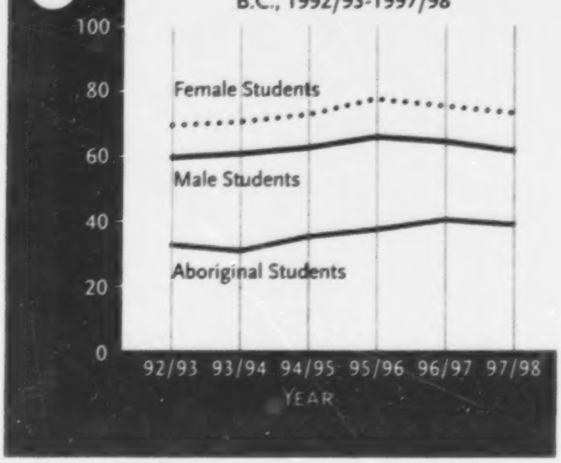


Proportion of Grade 12 students who took and passed the provincial exam. Source: B.C. Ministry of Education. Prepared by BC STATS, Ministry of Finance and Corporate Relations.

Figure 38

Grade 12 Students Who Took and Passed English 12

B.C., 1992/93-1997/98



Proportion of Grade 12 Students who took and passed the English 12 provincial exam. Source: B.C. Ministry of Education. Annual Report 1997/98.

Not all students choose to participate in the provincial examinations program. Some groups of students tend not to participate or perform to the level and extent of the general student population. These include male students, students from some language groups, Aboriginal students, and students from low-income neighbourhoods. Aboriginal participation and success on provincial exams is improving, but remains lower – about half that of non-Aboriginal students (Figure 38).

Compared to other provinces and countries, British Columbia tends to score at or above national and provincial averages in literacy, mathematics, and science skills. However, the 1994 *International Adult Literacy Survey* found that British Columbia (along with Ontario and the Atlantic provinces) has large socioeconomic differences in youth literacy. Students from less advantaged family backgrounds scored much lower than youth from more advantaged families (Willms, 1997).

Other student learning measures that are routinely monitored are average test scores for Grades 4, 7, and 10 in reading, writing, and math. These statistics are collected by the Ministry of Education and are available on a school district basis. Another measure of interest is the transition rate – the proportion of high school graduates who continue on to post-secondary education. The rate at which students move directly to post-secondary education provides an indication of a region's access to post-secondary institutions, as well as the learning culture of the area. For British Columbia overall, about 17 per cent of 1996/97 graduates went directly on to university[2] (B.C. Ministry of Education, 1998). Regional statistics on direct transition are currently being developed by the Ministry of Advanced Education and are expected to be available some time during the year 2000.

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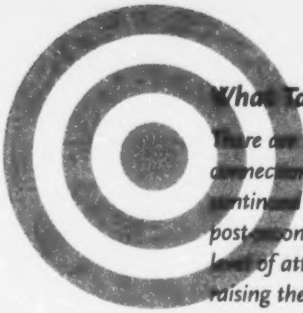
[2] *This figure does not include university colleges.*



What Targets Are Achievable?

There are no provincial targets for educational attainment of the population. Given the connection between education, employability, and health, it is appropriate to aim for continued increases in the proportion of the population who achieve high school and post-secondary graduation. One approach to target-setting is to aim to increase the overall level of attainment (currently 77 per cent for high school, 54 per cent for post-secondary) by raising the levels of regions and groups that currently have the lowest levels of attainment.

Target-setting could also focus on raising the levels of participation and performance among groups of students that are less likely to take and pass Grade 12 examinations, such as Aboriginal students, students in low-income families, and students in northern areas of the province.

What Actions Can We Take?

Parents and caregivers can:

- Talk to children about what goes on in school, and help them develop a positive attitude toward learning.
- Take an active role in improving the education system, for example, by participating in school accreditation teams.

Employers can:

- Provide support for school completion and upgrading programs in workplaces and communities, for people of all ages.

The school system can:

- Provide programs and supports that help young people stay in school.
- Investigate educational methods (curriculum, length of school year, criteria for graduation) in provinces and countries that out-perform us in academic skills.
- Encourage parents and communities to get involved in schools and issues affecting the educational system.
- Continue to monitor and report on student outcomes and performance, among students overall, disadvantaged students, and students who participate in targeted programs.

Objective

- Improve and maintain individual capacity and supports for making healthy lifestyle choices to enhance personal well-being and reduce health risks by:
  - increasing the percentage of British Columbians who do not smoke;
  - reducing the percentage of British Columbians who use alcohol or drugs inappropriately or excessively;
  - increasing the percentage of British Columbians who regularly participate in healthy physical activity;
  - increasing the percentage of British Columbians who have a healthy diet;
  - increasing the percentage of sexually active British Columbians who use appropriate contraception and safer sex practices; and,
  - increasing the percentage of British Columbians who use appropriate safety practices, e.g., safe driving habits, safe participation in sports, protection from over-exposure to the sun.

This section presents information on a few of the many personal health practices that influence health: smoking, alcohol consumption, physical activity, eating habits, bicycle helmet use, and sexual practices.

People make choices about these behaviours. However, our ability to adopt healthy behaviours is strongly influenced by factors in our environment – the addictiveness of tobacco, the types of food available, the income available to purchase nutritious food, the degree to which dangerous driving is celebrated through movies and television, the behaviours of peer groups, and so on. The objective, from a population health perspective, is to create conditions that help people make informed choices and encourage healthy behaviours, while not unduly encroaching on individual freedom of choice. It is also important to start with people's day to day concerns. For individuals and communities that are struggling with basic needs, it may be more appropriate to tackle jobs, an adequate income, child care, and housing, rather than trying to convince people to quit smoking, get more exercise, and lose weight.

What Do the Data Show?

- British Columbia continues to rank highest in Canada in healthy practices such as regular physical activity and bicycle helmet use.
- Compared with other provinces, British Columbia has the lowest rates of smoking and youth smoking, and the highest quit rate.
- Several indicators suggest that alcohol-related problems are increasing.
- Only 27 per cent of British Columbians are physically active enough to achieve health benefits. In terms of impact on the population's health, improving the numbers who are physically active is as important as reducing smoking.
- A major nutrition survey took place in British Columbia in 1999. Results, which are expected to be available in about two years, will provide detailed information about this important health topic.
- Teen pregnancy rates have started to decline, after being fairly steady for a decade or so. However, many British Columbians are not taking action to protect against sexually transmitted diseases and unintended pregnancies.

Smoking

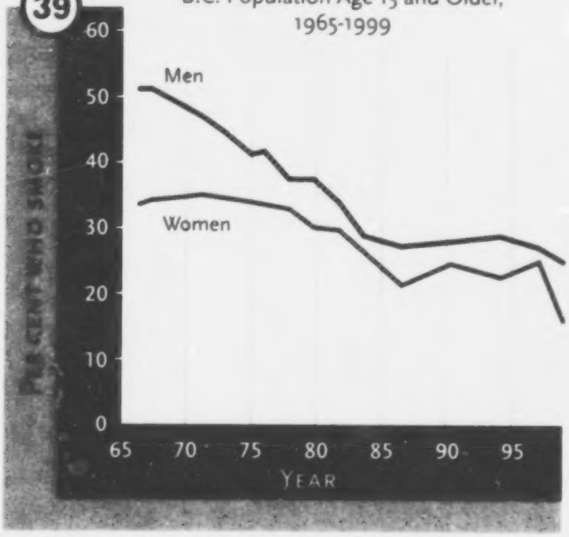
In 1997, almost one-quarter (22 per cent) of British Columbians age 12 and over were current smokers. By region, rates ranged from 17 per cent in North Shore to 29 per cent in the North West and Peace Liard regions. One in five teens (20 per cent) and nearly one-third (31 per cent) of young adults age 19-24 were smokers (Heart and Stroke Foundation, Tobacco Use in B.C. 1997, 1997).

There have been impressive reductions in smoking since the 1960s, when almost half of the adult population smoked. The downward trend stalled in the early 1990s, although results from a new Health Canada survey show that smoking has begun to decline again – to 20 per cent of adults (age 15 and over) in 1999 (Figure 39). Smoking remains common among young British Columbians. In the 1999 survey, 25 per cent of youth (age 15 to 24) were smokers (Health Canada, CTUMS, 1999).

Figure 39

Smoking Rate

B.C. Population Age 15 and Older, 1965-1999

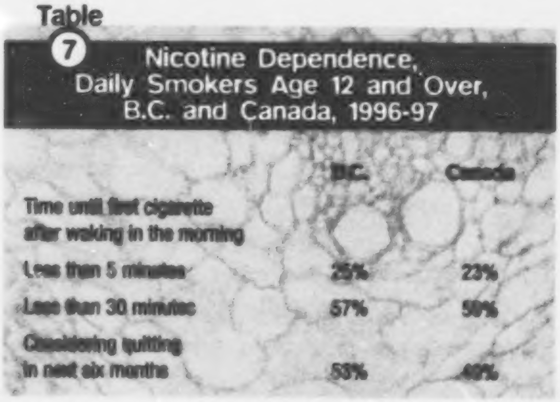


Proportion of the population who were current smokers (1990-1999) or daily smokers (1965-1989). Data on current smoking, a term that includes daily as well as non-daily smoking, are not available for British Columbia prior to 1990. Data for 1965-1986: Stephens, T. (1988, April). A critical review of Canadian survey data on tobacco use, attitudes, and knowledge. Prepared for Tobacco Programs Unit, Health Promotion Directorate, Health and Welfare Canada. Data for 1990: Canada's Health Promotion Survey 1990. Data for 1994: Health Canada. Survey on Smoking in Canada, Cycle 1. Data for 1996-97: Statistics Canada. National Population Health Survey. Data for 1999: Health Canada. Canadian Tobacco Use Monitoring Survey (CTUMS), Wave 1. http://www.hc-sc.gc.ca/hpb/lcdc/bc/ctums

British Columbia has greatly expanded its tobacco reduction efforts, and smoking continues to be less common here than in other parts of Canada. British Columbia has the lowest rates of smoking and youth smoking, and the highest quit rate (Health Canada, CTUMS, 1999). However, continued and comprehensive efforts are needed, if we are to dramatically reduce tobacco use and the illnesses it causes.

Nicotine dependence is very powerful. Over half (57 per cent) of smokers are so addicted that they have their first cigarette within a half hour of waking each morning, and one-quarter have a cigarette within five minutes of waking (Table 7). For many British Columbians, smoking is a well-established habit. Daily smokers in B.C. are evenly divided between those contemplating quitting in the next six months and those not even considering quitting. Just over half (53 per cent) of daily smokers say they are considering quitting within the next six months. These "contemplators" are taking the first step toward smoking cessation.

Table 7



Nicotine Dependence, Daily Smokers Age 12 and Over, B.C. and Canada, 1996-97

	B.C.	Canada
Time until first cigarette after waking in the morning		
Less than 5 minutes	25%	23%
Less than 30 minutes	57%	59%
Considering quitting in next six months	53%	49%

Source: Statistics Canada. National Population Health Survey 1996-97. In Statistical Report on the Health of Canadians, *Federal, Provincial and Territorial Advisory Committee on Population Health, 1999.*

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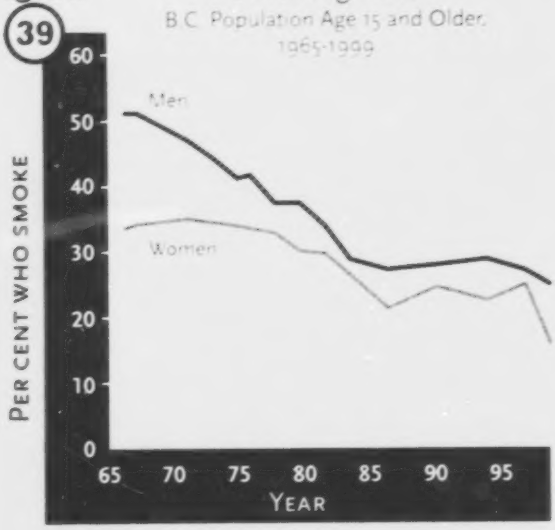

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Time until first cigarette after waking in the morning		
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Considering quitting in next six months	53%	49%

[illegible]

Regular Heavy Drinking

According to the National Population Health Survey, 19 per cent of B.C. drinkers were regular heavy drinkers in 1996-97, up from 14 per cent in 1994-95. This amounts to about 460,000 people who could be considered as problem drinkers. On this measure, British Columbia was mid-range among the Canadian provinces. Regular heavy drinking was most common among young people: one-third of youth (age 12-24) reported consuming alcohol to this extent (Table 8).

The Adolescent Health Survey also found that heavy drinking is becoming more common among B.C. youth. In 1998, 44 per cent of students said they engaged in binge drinking in the past month. This is an increase from 1992, when binge drinking was reported by [illegible] per cent of students (The McCreary Centre Society, [illegible]).

There are other indications that alcohol is being consumed at inappropriate levels. About 5 per cent of parents (of children age 0 to 11 years) say drinking is a source of tension or disagreement in the home. Children in these families are being exposed to inappropriate consumption and are at increased risk of alcohol misuse themselves. About half of all spousal assault incidents — 4,699 incidents in 1998 — were alcohol-related.

Table 8 Indicators of Problem Drinking, B.C.

Regular heavy drinking, 1996-97 [1]	
Men age 12 and over	25%
Women age 12 over	12%
Youth age 12 to 24	33%
All current drinkers age 12 and over	19%
Binge drinking in past month, Grade 7-12 students, 1998 [2] (of those students who have used alcohol)	
Males	45%
Females	42%
All students	44%
Alcohol causes problems at home, 1996-97 [3]	
Per cent of children age 0 to 11 years whose parents say drinking is a source of tension or disagreement in the home	5%
Spousal assault incidents, 1998 [4]	
Number that were alcohol-related	4,699
Per cent of spousal assault incidents that were alcohol-related	49%
Alcohol-related birth defects [5]	
Per cent of women who drink during pregnancy	12%
Number of babies born with FAS and related conditions each year	200-300
Alcohol-related deaths, 1998 [6]	
Directly related to alcohol, e.g., cirrhosis, alcoholic psychoses	463
Indirectly related to alcohol, e.g., accidents	1429
Total alcohol-related deaths	1892

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Number of babies born with FAS and related conditions each year	200-300
Alcohol-related deaths, 1998 [6]	
Directly related to alcohol, e.g., cirrhosis, alcoholic psychosis	[illegible]
Indirectly related to alcohol, e.g., accidents	1420
Total alcohol-related deaths	1882

[1] Proportion of current drinkers age 12 and over who report having had five or more drinks on one occasion, 12 or more times in the previous year. Source: Statistics Canada. National Population Health Survey 1996-97. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health. [2] Students who report consuming 5 or more drinks within a couple of hours in the past month, as a proportion of students who have used alcohol. Source: Adolescent Health Survey II. The McCreary Centre Society. [3] National Longitudinal Survey of Children and Youth 1996-97. Prepared for the B.C. Ministry for Children and Families by the Centre for International Statistics. [4] B.C. Ministry of Attorney General. (1999). Police and crime: Summary statistics 1989-1998. Vancouver, BC: Ministry of Attorney General, Police Services Division. http://www.ag.gov.bc.ca/police_services/publications/. [5] Proportion of mothers of children less than two years old who say they consumed alcohol during all or part of their pregnancy. National Longitudinal Survey of Children and Youth 1996-97. In Measuring Our Success, B.C. Ministry for Children and Families, December 1999. Estimated number of babies born with Fetal Alcohol Syndrome (1-2 per 1,000 live births) or with significant long-term disabilities related to partial FAS (4-5 per 1,000 live births). [6] Number of deaths in which alcohol was the underlying or contributing cause of death, as noted on the Medical Certification of Death. Source: B.C. Vital Statistics Agency. Vital Statistics Annual Report 1998.

It is estimated that between 200 and 300 babies are born with alcohol-related birth defects each year, although the number is not known precisely. In terms of deaths, 1,892 deaths were classified as alcohol-related in 1998. This includes deaths where alcohol was the underlying cause of death, such as liver disease or alcoholic psychoses, as well as diseases or accidents where alcohol was specified on the death certificate as a contributing cause.

Physical Activity

In 1996-97, 27 per cent of British Columbians age 12 and over were physically active, according to an index that measures the frequency, duration, and intensity of their participation in leisure-time physical activities. Another 23 per cent were moderately active, while half (50 per cent) were inactive.

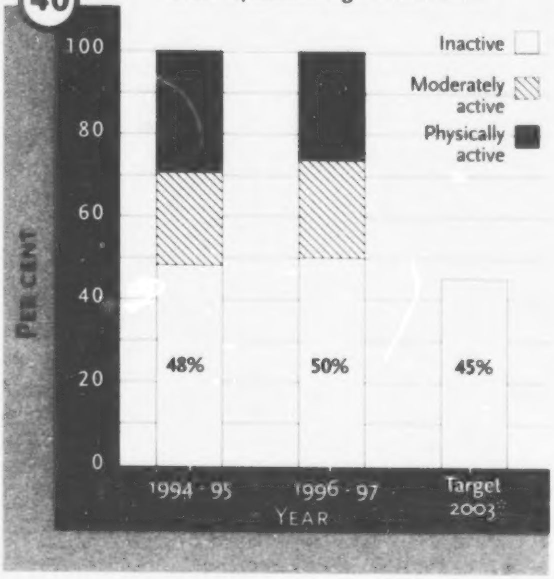
British Columbians are more physically active than residents of other Canadian provinces. However, physical inactivity is a serious health issue. Half of our population is considered inactive, and the situation has worsened slightly since 1994/95, when 48 per cent were considered inactive (Figure 40). Research clearly shows that physical activity is a key factor in improving health and quality of life. In terms of its impact on health, regular physical activity is as important as not smoking and healthy eating (U.S. Department of Health and Human Services, 1996; Heart Health Coalition, 1997).

Which groups are the most active? Men, youth, and those with higher incomes are more likely to be physically active than women, people in the older age groups, and those with low income. By age, the proportion who are physically active declines from 43 per youth to 17 per cent among seniors. These patterns are typical of surveys in Canada and in other countries.

There is growing concern that children are not receiving an adequate level of regular, vigourous physical activity. Only one-third of Canadian children (age 5 to 17) are active enough for optimal growth and development, according to surveys that track the physical activity levels of Canadians (Canadian Fitness and Lifestyle Research Institute, 1997). Competitive stress, pressure to excel, cost, lack of transportation, and time spent indoors watching television or playing computer games are some of the factors that keep children from participating in physical activities.

Figure 40 Physical Activity

B.C. Population Age 12 and Over



** Decrease inactivity by 10 per cent by the year 2003. This goal was set in 1997 by the federal, provincial, and territorial ministers responsible for fitness, recreation, and sport.*

Source: Statistics Canada. National Population Health Survey. In Report on the Health of Canadians. Technical Appendix and Statistical Report on the Health of Canadians. Advisory Committee on Population Health, 1996 and 1999.

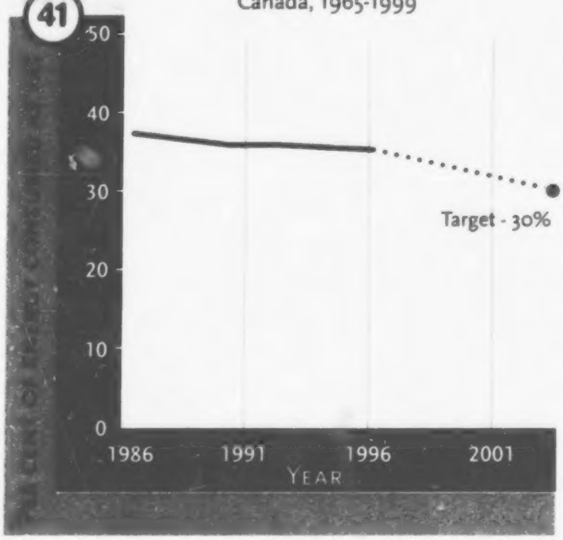
Healthy Eating

Based on food purchase estimates, Canadians currently consume about 35 per cent of their total calories as fat. Although there has been a downward trend in recent years, we have not yet reached 30 per cent, the target level recommended by nutrition experts (Figure 41).

Consumers seem to be aware of the connection between dietary fat and health. In the 1994-95 National Population Health Survey, most British Columbians (61 per cent) said they were concerned about the amount of fat in their food and were taking action to reduce their consumption of fat. Common ways to limit fat included reducing the use of butter, oil, and salad dressing, eating fewer fried foods, and cutting down on high-fat milk products.

Figure 41 Dietary Fat Consumption

Canada, 1965-1999



Estimated percentage of calories consumed as fat, based on food purchase data (data tend to over-estimate actual intake). Source: Statistics Canada. Family Food Expenditure in Canada, 1986, 1990, 1992, 1996. Special tabulations via AGNAP program in Agriculture and Agri-Food Canada.

While consumers are getting the "choose lower-fat" message, there is less awareness of the need to increase carbohydrates (starch) and fibre in the foods people eat. In 1994-95, only one in four British Columbians (26 per cent) reported they were concerned and making efforts to increase carbohydrates and fibre in their diets, through actions such as eating fruits and vegetables at most meals, eating more whole-grain products, and eating other high-fibre food.

What people eat is not always a matter of personal choice. Healthy eating can be a challenge if you don't have enough income to purchase food. Data presented earlier in this report show that many British Columbians lack sufficient income to purchase enough nutritious food, as evidenced by the numbers below the low-income line and who rely on food banks.

Bicycle Helmet Use

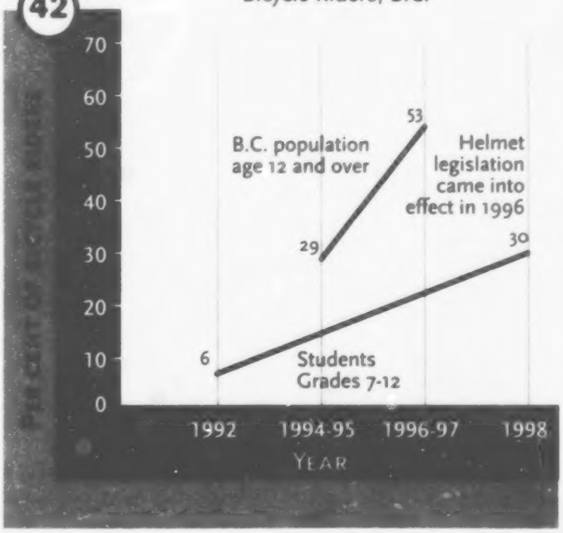
According to the National Population Health Survey, the use of bicycle helmets has increased substantially in British Columbia. In 1996-97, soon after helmet[114] legislation came into effect, more than half of British Columbians (53 per cent) who ride bicycles said they always wear a helmet when riding a bike. This was the highest rate of helmet usage in Canada and represents a significant increase since 1994-95, when only 29 per cent of British Columbians reported always wearing a helmet. The Adolescent Health Survey reported a large increase as well, although rates of usage in this survey were lower – 30 per cent in 1998, up from 6 per cent in 1992 (Figure 42).

Based on the increased usage figures, British Columbia's new regulations and education efforts seem to be having an effect. Nova Scotia and Ontario, two other provinces that have recently enacted bicycle helmet legislation, also show high rates of usage, according to the National Population Health Survey. It is important to note that bicycle helmet usage does not necessarily imply correct usage. Like child car seats, bicycle helmets must be used correctly to be effective.

A three-year project is currently under way to examine the impact of British Columbia's bicycle helmet law and bicycle safety programs. The Insurance Corporation of British Columbia is one of the partners in this major research project, which will involve reviewing bicycle

Figure 42 Always Wear Bicycle Helmet

Bicycle Riders, B.C.



Students in Grades 7-12: Healthy Connections: Listening to BC Youth. Highlights from the Adolescent Health Survey II. The McCreary Centre Society, 1999. B.C. population age 12 and over: Statistics Canada. National Population Health Survey. Report on the Health of Canadians: Technical Appendix and Statistical Report on the Health of Canadians. Advisory Committee on Population Health, 1996 and 1999.

Table 9

High-Risk Sexual Practices, B.C.

B.C. Population Age [illegible] [1]	[illegible]	[illegible]
Three or more sexual partners in past year	6%	5%
Did not use condom last time (in a relationship of less than 12 months)		23%
Students in Grades 7-12 [2] (of those students who were sexually active)	[illegible]	[illegible]
Four or more sexual partners		
Males	30%	[illegible]
Females	[illegible]	[illegible]
Did not use condom last time they had sex		
Males	[illegible]	[illegible]
Females	47%	[illegible]
No method of birth control last time	[illegible]	25%

[1] Population age 15-59 who had three or more sexual partners in the past year, as a percentage of those who had sexual intercourse in the past year. Per cent of those age 15-59 in a relationship of less than 12 months duration who did not use a condom the last time they had sex. Statistics Canada. National Population Health Survey. In Report on the Health of Canadians: Technical Appendix and Statistical Report on the Health of Canadians. Advisory Committee on Population Health, 1996 and 1999. [2] Per cent of sexually active youth who have had four or more partners, who did not use a condom, and who used either no method or withdrawal as a form of contraception the last time they had sex. Sexually active youth are those who have ever had sexual intercourse (30 per cent of students in 1992, 23 per cent in 1998). Healthy Connections: Listening to BC Youth. Highlights from the Adolescent Health Survey II. The McCreary Centre Society, 1999.

injury and crash data and interviews with cyclists. Results of this research project will be useful in assessing the success of the helmet law and in developing future programs to promote helmet usage.

High-Risk Sexual Practices

Many British Columbians are not taking action to protect themselves against sexually transmitted diseases and unintended pregnancies. The use of condoms, especially in short-term relationships, is an important means of reducing the risk of sexually transmitted diseases. Yet, among those age 15-69 in a relationship of less than 12 months duration, almost one-quarter (23 per cent) did not use a condom the last time they had sex. Five per cent of British Columbians (of those who had sex in the past year) had three or more sexual partners in the past year, and this magnifies their risk of sexually transmitted health problems.

Among high school students, the 1998 Adolescent Health Survey found an encouraging trend – more teens are delaying the start of sexual activity. About one-quarter (23 per cent) of students in Grades 7 to 12 have had sexual intercourse, compared to 30 per cent in 1992. However, many of those who are having sex are not protecting themselves against sexually transmitted diseases and unwanted pregnancies. A high proportion of sexually active youth (one third of males and almost one-half of females) said they or their partner did not use a condom last time they had sex, and condom use has not increased since 1992. Furthermore, one-quarter of sexually active youth did not use an effective form of birth control (Table 9).

Teen Pregnancy

Teen pregnancy rates have started to decline in the past few years, after being fairly steady for a decade or so. Rates are currently 40 per 1,000 among women age 15-19 and 25 per 1,000 age 15-17 (Figure 43). This represents a decrease of about 20 per cent over the rates in British Columbia ten years ago.

Table ⑨ High-Risk Sexual Practices, B.C.

B.C. Population Age 15-59 [1]	**1994-95**	**1996-97**
Three or more sexual partners in past year	6%	5%
Did not use condom last time (in a relationship of less than 12 months)		23%
Students in Grades 7-12 [2] (of those students who were sexually active)	**1992**	**1998**
Four or more sexual partners		
Males	30%	27%
Females	24%	20%
Did not use condom last time they had sex		
Males	36%	36%
Females	47%	48%
No method of birth control last time	20%	25%

[illegible]

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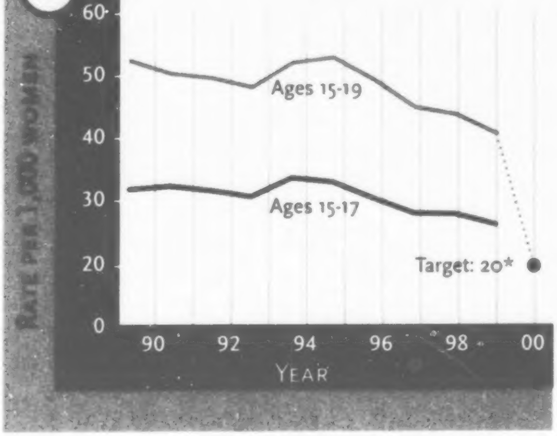
Figure 43

Teen Pregnancy Rate

B.C., 1989/90 - 1998/99



*Target based on best international rates:
11 pregnancies/1000 Netherlands and 29 pregnancies/1000 Sweden.

Pregnancies include live births, stillbirths, induced abortions, and miscarriages resulting in hospitalization.

Source: B.C. Vital Statistics Agency, Ministry of Health. Pregnancy Counts and Rates by Age Groups by Health Region.

Traditionally, teen pregnancy rates have been much higher in the North and Island/Coast regions than in other areas of the province. Some of these higher-rate regions, North West and Coast Garibaldi in particular, have had large decreases in their teen pregnancy rates. Simon Fraser and Vancouver are other regions that have shown declines of 30 per cent or more between 1989/90 and 1998/99 (Figure 44).

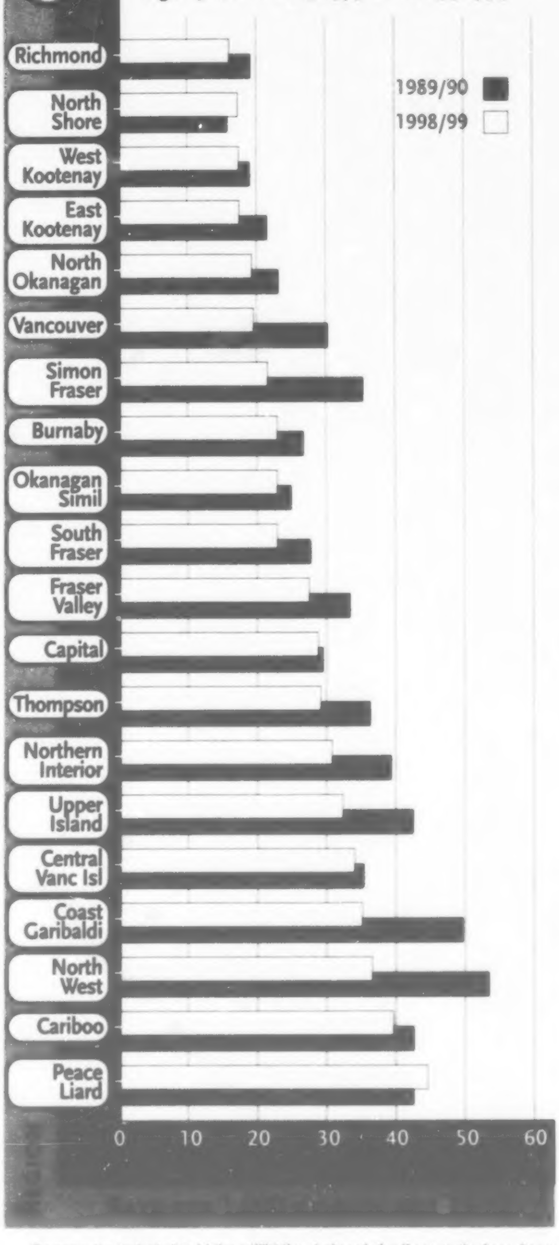
Although teen pregnancy rates are declining, there are still many women who are becoming pregnant at a young age. An estimated 2,079 pregnancies occurred to women under age 18 (1,968 pregnancies age 15-17 plus 111 age 10-14) in 1998/99. This suggests that we are failing to provide accessible and effective contraception information and products for teens, in a way that works for them.

Unintended pregnancies occur in all age groups, not just to teens. Of the estimated pregnancies in all age groups, more than one in five end in induced (therapeutic) abortions. Safe abortion services are an essential component of reproductive care, but the prevention of unwanted pregnancy is vastly preferable. With more than 14,000 induced abortions performed each year, it is clear that many British Columbia women have unintended pregnancies.

Figure 44

Reductions in Teen Pregnancy Rate

Age 15-17, B.C., 1989/90 and 1998/99



Pregnancies include live births, stillbirths, induced abortions, and miscarriages resulting in hospitalization. Source: B.C. Vital Statistics Agency, Ministry of Health. Pregnancy Counts and Rates by Age Groups by Health Region.

What Targets Are Achievable?

Comprehensive strategies in other parts of the world have been successful in reducing tobacco use dramatically. California, for example, reduced its smoking rate from 27 per cent in 1988 to 18 per cent in 1997. Using California's 10-year rate of decline as a benchmark, a target of 15 per cent for British Columbia was proposed by the Provincial Health Officer in his 1996 annual report. Today, provincial target-setting is focusing on shorter-term measures of success, e.g., levels of awareness, availability of prevention resources, and contemplation of quitting. A comprehensive, province-wide survey of tobacco use was carried out for the first time in 1997. Updates every three to five years are planned, so that tobacco use and the outcomes of tobacco reduction activities can be monitored on a regular basis.

Regarding alcohol use, target-setting should focus on reducing the harm that alcohol use causes. Measures of success could include reductions in alcohol-related spousal assaults and alcohol-related traffic accidents, and fewer babies born with alcohol-related birth defects. Fetal Alcohol Syndrome and related disorders are entirely preventable, if women are helped to reduce the amount of alcohol they consume during pregnancy.

In August 1997, the federal and provincial/territorial ministers responsible for fitness, recreation, and sport set a collective goal to decrease the proportion of inactive Canadians by 10 per cent by the year 2003. For British Columbia, this would mean a reduction from 50 per cent to 45 per cent. This will be a challenge to achieve, as the proportion who were inactive increased slightly between 1994-95 and 1996-97 (Figure 40). However, on a more optimistic note, 30 per cent of British Columbians say they intend to increase their physical activity in the next year (Health Canada, November 1999).

Physical education is a required subject from kindergarten through grade 10. The province recommends that 10 per cent of curriculum time be allocated to physical education, and schools that meet this and other criteria can apply for an award that acknowledges their delivery of quality daily physical education. In most years, only a small proportion of B.C. schools (2 per cent in 1996/97) receive the award, which is offered by the Canadian Association for Health, Physical Education, Recreation and Dance (Heart Health Coalition, 1997). School districts should consider a target to increase the proportion of schools who qualify for "quality daily physical education" designation.

Provincial objectives and targets for healthy eating have not yet been established, in part because we lack baseline data on the population's nutritional status. In 1997, the Heart Health Coalition put forward a plan to improve the nutritional health of British Columbians (Heart and Stroke Foundation, 1997), and work is underway to develop a coordinated response to many of the issues associated with food and nutrition policy. Specific targets for British Columbia – and actions to achieve them – will be further developed, once data from the Adult Nutrition Survey and the Canadian Community Health Survey become available.

At the national level, there is consensus that for a healthy diet, we should aim to reduce dietary fat to an average of 30 per cent of total calories. Experts agree that reducing fat to this level will lower the risk of heart disease, cancer, and chronic conditions such as diabetes and high blood pressure. While 30 per cent is the ideal, even a small reduction in intakes of fat, saturated fat, and cholesterol would likely yield substantial benefits. It has been estimated than a 1 per cent reduction in blood cholesterol could result in a 2 to 3 per cent decrease in the risk of heart disease (Advisory Board, 1996).

Bicycle helmets should be used by all bicycle riders, whenever they are riding a bike. A short-term target would be to increase usage among groups that currently have low rates of usage, using the rates achieved by high-usage groups as a benchmark. Among British Columbians, two-thirds (66 per cent) of the highest-income people said they always wear a helmet, compared to about one-third (35 per cent) of those in the lowest-income households.

Ideally, all individuals would be informed about sexual health issues, and this information would lead to safer-sex practices. Rates achieved by the healthiest groups can provide guidance as to targets that might be achievable in the short term. For example, having sex before 14 years of age is less common among high school students who feel closely connected to their families (3 per cent), and condom use is highest among students living in the Capital region (61 per cent).

Using the best international rates as a guide (11 per 1,000 in the Netherlands and 29 per 1,000 in Sweden), a target of 20 pregnancies per 1,000 women age 15-19 was proposed by the Provincial Health Officer in his 1996 annual report. Some areas within British Columbia are approaching this target; North Shore, Richmond, and West Kootenay had teen pregnancy rates that were between 25 and 30 per 1,000 in 1998/99. Nearly one-half of all unintended pregnancies could be avoided if women had ready access to emergency contraception, based on data from the United States. British Columbia pharmacists and physicians are currently working to expand access to emergency contraception in this province.

What Actions Can We Take?

Individuals and families can:

- Build physical activity into your everyday life. For some practical ways to achieve this, obtain a copy of Canada's Physical Activity Guide to Healthy Active Living. Copies are available free of charge from http://www.paguide.com
- Follow Canada's Food Guide to Healthy Eating.
- Maintain a smoke-free home.

Employers can:

- Promote non-smoking, physical activity, and healthy eating by providing things like showers, fitness facilities, flex-time, secure bicycle parking, smoking cessation information, and nutritious foods in workplace cafeterias.

Schools can:

- Develop ongoing methods to assess the relevance, availability, and effectiveness of health education programs.
- Involve youth in planning and implementing alcohol, drug, and tobacco education programs.
- Require quality, daily physical education in each school grade. School-based programs should include education about the health benefits of physical activity and participation in moderate-to-vigorous physical activity, with an emphasis on activities than can be enjoyed throughout life.
- Ensure that nutritious foods are available in school cafeterias. Integrate nutrition education into meal and snack times in schools and child care centres.

Health and social service agencies can:

- Ensure that smoking cessation services are offered to all smokers. The provincial government, the medical profession, and other health care providers should work together to ensure that an effective program is in place.
- Continue to monitor smoking prevalence and the outcomes of tobacco reduction activities on a regular basis, at local and provincial levels.
- Provide a comprehensive plan for dealing with addictions, with a focus on reducing the harms caused by alcohol and other drugs.
- Improve the ability of physicians, nurses, teachers, social workers, and other professionals to accurately identify drinking patterns and drinking problems.
- Develop a comprehensive plan to encourage and support all children and adults to be physically active.
- Pay attention to the needs of nutritionally vulnerable groups, which include pregnant women, children, and in particular those in low-income and disadvantaged communities.
- Ensure that all people have access to cost-effective reproductive health services, including information on sexuality, sexually transmitted disease, conception, and contraception, at all stages in their life cycle, and regardless of where they live in the province.
- Address the underlying social and economic factors that affect teen pregnancy: poverty, emotional deprivation, school failure, and lack of hope for the future.

Communities can:

- Improve access to places where people can be physically active, by reducing barriers such as cost and lack of transportation.
- Encourage restaurants to participate in programs that involve offering low fat menu choices and labelling food as to fat content.
- Continue to work on community strategies to promote bicycle helmet usage and to evaluate the impact of those strategies in reducing bicycle-related injuries.

Objective

- Increase or maintain the capacity for independent living of persons who require assistance with activities of daily living due to disabilities or limitations in their physical, mental, social, or emotional functioning, including:
  - access to necessary supports and services, including recognition of and supports for family and other informal caregivers; and,
  - capacity to take responsibility for, or participate in, planning and managing personal supports and services.

Many people require assistance with activities of daily living due to disabilities or limitations in their physical, mental, or emotional functioning. One way to improve quality of life for those requiring assistance is to maximize people's opportunities to live as independently as they comfortably can.

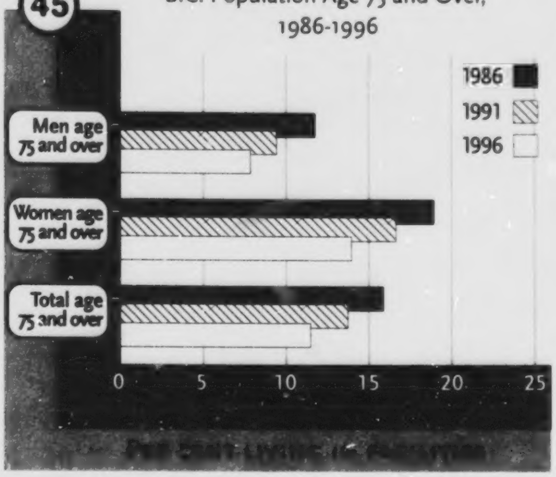
At this time, we have few data with which to measure the level of independence and quality of life among persons with activity limitations and their caregivers. Census data on the living arrangements of older citizens provide some facts about one aspect of independence – the independence that comes from living in the community.

What Do the Data Show?

- Seniors are much more likely to be living in the community than in the past. In 1996, 11.5 per cent of those age 75 and over lived in a care facility or institution of some type. Ten years ago, 16 per cent lived in a care facility.

Figure 45

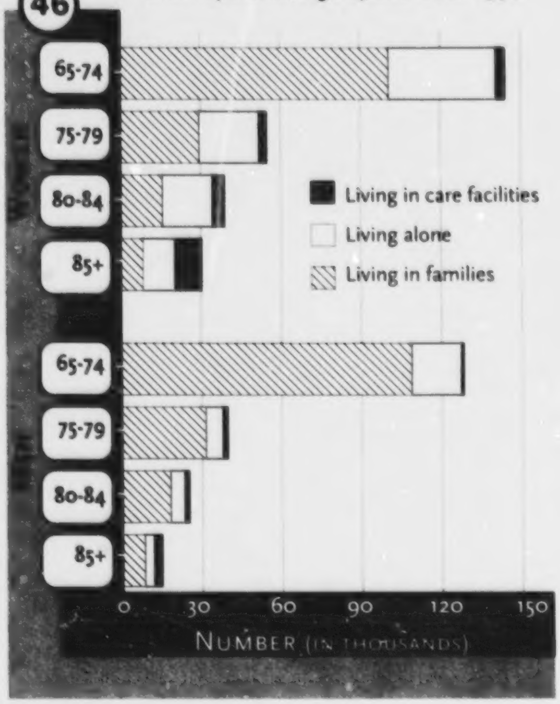
Living in Care Facilities
B.C. Population Age 75 and Over, 1986-1996



Proportion of the population age 75 and over who lived in collective dwellings, which includes long term care facilities, hospitals, hotels, and rooming houses. Independent living dwellings (apartment living with or without common dining rooms) are not included. Source: Statistics Canada. Prepared by BC STATS. B.C. Ministry of Finance and Corporate Relations. 1996 Census Fast Facts. Focus on BC Households: Where do Seniors Live?

Figure 46

Living Arrangements
B.C. Population Age 65 and Over, 1996



Number of seniors living in families (with spouse, relatives, or non-relatives), living alone, and living in long term care facilities, hospitals, or other collective dwellings. Source: Statistics Canada. Prepared by BC STATS. B.C. Ministry of Finance and Corporate Relations. 1996 Census Fast Facts. Focus on BC Households: Where do Seniors Live?

Living Arrangements, Age 65 and Older

Today, older British Columbians are much more likely to be living in the community than they were in the past. In 1996, 88.5 per cent of all seniors age 75 and older lived in the community (54.5 per cent with their spouse or relatives, 33.9 per cent living alone), while 11.5 per cent lived in hospitals, care facilities, or other collective dwellings. Ten years ago, 16 per cent lived in facilities (Figure 45).

As they grow older, seniors, especially women, are more likely to live alone or to live in a care facility of some type. After age 85, 44 per cent of women live alone, and one-third live in a facility (Figure 46). This is because women, on average, live longer than men, and the fact that more men than women have a younger spouse.

The shift toward community living is due to a combination of factors. Seniors today are healthier than in the past (Chen & Millar, 2000). When health problems occur, home care and homemaker services allow many people to maintain their independence outside of institutions. Another factor could be new types of housing such as independent living apartments. Although they may provide some collective services such as common dining rooms, these new apartment-style living arrangements are not counted as collective dwellings for Census purposes.

Remaining out of an institution does not necessarily represent improved quality of life for all clients and their caregivers. While caring for family members can be rewarding for many people, it can also contribute to feelings of exhaustion and isolation. According to the *General Social Survey* in 1996, about half (48 per cent) of British Columbia caregivers who provided care to people with long-term health or physical limitations said that providing care impacts their social activities, and 23 per cent said their own overall health was impacted. On the other hand, most caregivers felt it strengthened their relationships, and more than half (54 per cent) said caregiving was no real burden (Advisory Committee on Population Health, *Statistical Report*, 1999).

What Targets Are Achievable?

Living in the community is presumed to reflect a higher level of independence and, therefore, a higher quality of living than living in an institution. However, more people living in the community may also mean that fewer institutional spaces are available to those who need them. Institution-based care will be the best option for many people, and we do not know what the ideal rate of institutionalization would be. Therefore, no specific targets are proposed at this time.

What Actions Can We take?

Health and social service organizations can:

- Maximize opportunities for people to reach the highest levels of independence they comfortably can, in as many dimensions of life as possible (home, work, and community).
- Develop practical ways to measure opportunities for independent living. For example, we might like to know what percentage of public spaces are accessible to persons with disabilities, or what proportion of persons with mental illness are able to find suitable housing.

Physical Environment

Goal 3: A diverse and sustainable physical environment with clean, healthy, and safe air, water, and land.

Goal 3 has to do with the physical environment, which provides us with food, water, air, sunshine, materials for shelter, clothing, industry, and opportunities for recreation.

Contamination and hazardous conditions in the physical environment can cause illness, disease outbreaks, or other immediate threats to human health. Exposures to substances such as second-hand smoke, cadmium, pesticides, or ultraviolet radiation can increase the risk of cancer or chronic diseases later in life. Depletion of soils, disruption of food chains, and activities that contribute to global climate change can pose an even greater threat, because they threaten our long-term physical survival, emotional health, and the health of the economy.

The following section presents information about some of the environmental factors that are known to affect human health. This includes indicators that describe the quality of our air, water, food supply, and land and soil, as well as the longer term issue of sustainability. The physical environment – the ecosystem we live in – is very complex. It is impossible for one indicator to fairly represent this complexity. Additional indicators and more detailed statistics are available from the Ministry of Environment's State of Environment Reporting Office, which issues regular reports on environmental trends and progress toward sustainability (http://www.env.gov.bc.ca/sppl/soerpt).

Issues discussed in this chapter include:

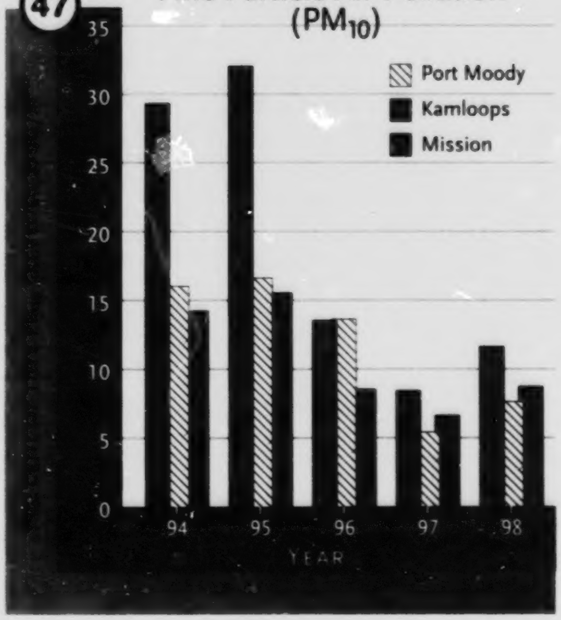
- air quality
- water
- food
- land and soil
- sustainability

Objective

- Improve and maintain air quality throughout British Columbia.

Air pollution can damage people's lungs, with short and long-term health effects. Young children, the elderly, and those with lung and heart disease are the most sensitive groups. This section presents information about two of the greatest airborne risks that British Columbians face: small particles called PM10 or PM2.5 and exposure to second-hand smoke.

Figure 47 Health Risks from Fine Particle Air Pollution (PM_{10})



*The level above which health effects begin to occur.
Source: B.C. Ministry of Environment, Lands and Parks, Air Resources Branch. Data obtained from State of Environment Reporting, http://www.env.gov.bc.ca/sppl/soerpt/

What Do The Data Show?

- About three-quarters of communities where PM_{10} air pollution is monitored show levels that indicate health risk, more than 5 per cent of the time.
- New regulations are helping to reduce workplace exposure to second-hand smoke. But many children – in 17 per cent of households – are exposed to second-hand smoke, with short-term and long-term health effects.

PM_{10} Air Pollution

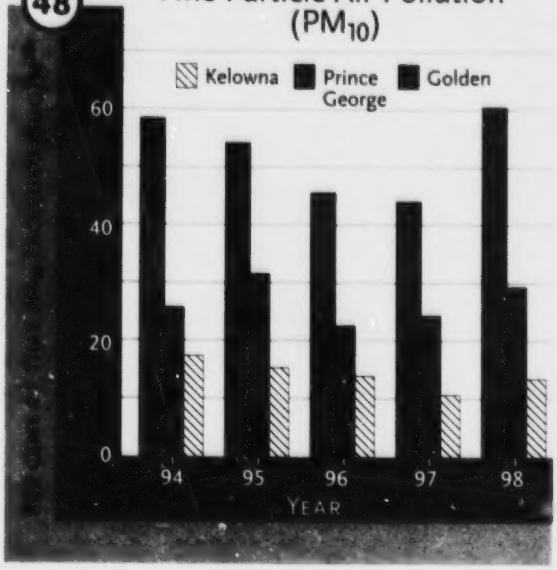
In recent years, there have been some significant reductions in air pollution levels. Some monitoring sites that previously had high levels have been able to reduce their daily concentrations of PM_{10} (Figure 47). These decreases are due to a combination of factors, including weather conditions, changes in the type of industrial activity in an area, and initiatives to reduce air pollution. Although some monitoring sites have shown improving levels, fine particulates – dust, dirt, soot, smoke, or droplets that are released into the air from factories, power plants, motor vehicles, fires, or other sources – are still having a significant impact on health in many areas of the province.

In 1998, about three-quarters of communities where PM_{10} is monitored had levels in the range associated with health effects, more than 5 per cent of the time. Communities in the Lower Mainland and on Vancouver Island were exposed to health risks from PM_{10} less often than communities in the interior of the province. In the Lower Mainland and on Vancouver Island, PM_{10} levels exceeded 25 micrograms per cubic metre (the level above which health effects can occur) between 2 and 12 per cent of the time. Communities in the interior of the province were exposed to these levels between 15 to 60 per cent of the time (Figure 48). Information about PM_{10} levels at each monitoring station is available from State of Environment reports (http://www.env.gov.bc.ca/sppl/soerpt) or from the Health Data Warehouse (http://admin.moh.hnet.bc.ca/hdw).

Outside the Greater Vancouver area, beehive burners, pulp and paper mills, railways, and burning are the major sources of PM_{10}. From a public health perspective, wood stoves are a significant source, since wood smoke is often released in heavily populated areas. In the Lower Mainland, point sources (fixed sources such as smoke stacks, that operate under air discharge permits) and areas sources (primarily agriculture and residential sources) each account for 37 per cent of the PM_{10} emissions. Cars and other forms of transportation account for about one-quarter (26 per cent) of emissions (B.C. Ministry of Environment, Lands and Parks, 2000).

Figure 48

Health Risks from Fine Particle Air Pollution (PM_{10})



**The level above which health effects begin to occur.*
Source: B.C. Ministry of Environment, Lands and Parks, Air Resources Branch.
Data obtained from State of Environment Reporting,
http://www.env.gov.bc.ca/sppl/soerpt/

Studies in the United States have suggested that the newer diesel engines give out greater numbers of very small particles called $PM_{2.5}$, the kind that pose the greatest health risk. In response, a Task Force was commissioned to study the health effects from diesel exhaust in the Lower Mainland. The Lower Fraser Valley Diesel Task Force will present its results to the Greater Vancouver Regional District later in the year 2000.

Exposure to Second-Hand Smoke

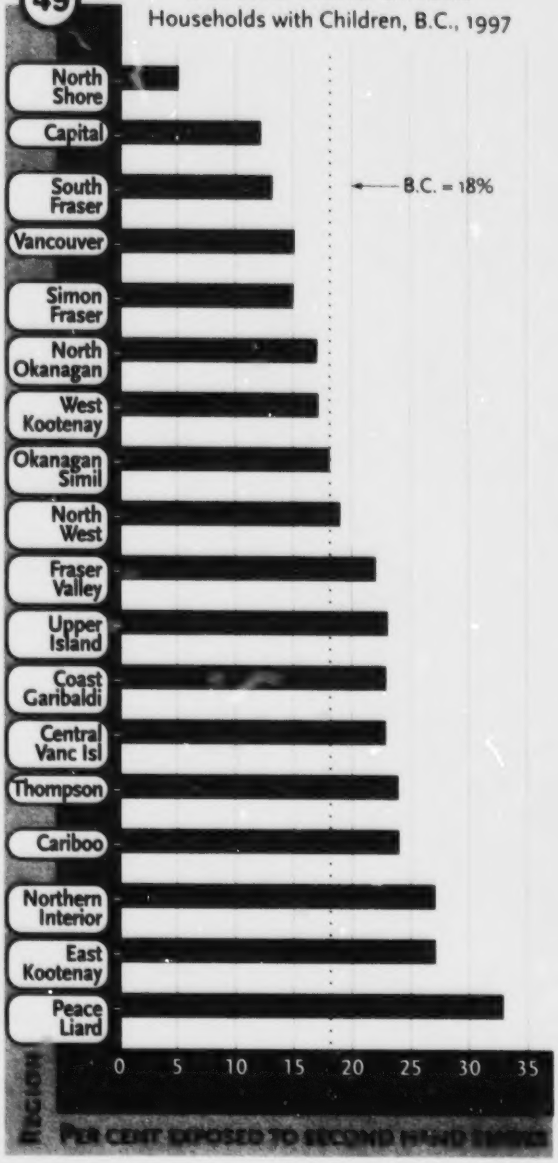
For the province overall, 18 per cent of non-smokers reported daily or nearly-daily exposure to second-hand smoke in 1997. Since that time, the Workers' Compensation Board has established new regulations that prohibit workplace exposure to second-hand smoke. These new regulations came into effect April 1998 in most workplaces. If these regulations are effective, we should be able to come close to eliminating workplace exposure to this major health risk.

In spite of its many risks to children, almost one-fifth (18 per cent) of households with children under age 11 have daily or nearly-daily exposure to second hand smoke in the home. In some areas of the province, the percentage of homes with second-hand smoke is as high as 33 per cent (Figure 49).

Figure 49

Exposure to Second-Hand Smoke

Households with Children, B.C., 1997



Proportion of households with children age 11 years and under where there is daily or nearly-daily exposure to second-hand smoke. Simon Fraser region includes Burnaby, and Vancouver includes Richmond. Source: Tobacco Use in B.C. 1997. Heart and Stroke Foundation of B.C. and Yukon.

What Targets Are Achievable?

British Columbia currently has an air quality objective for PM_{10}, and a Canada-wide standard for smaller particles called $PM_{2.5}$ has recently been ratified by the provincial ministers of the environment. Air quality targets are usually developed through consensus, after considering evidence about health effects and balancing this against levels that are achievable. It is recognized that targeted levels will not be completely protective of human health. Some health risks will remain, even at or below the targeted level. For example, British Columbia's objective for PM_{10} is 50 micrograms per cubic metre (24-hour average), although health effects can occur at half this concentration. Similarly, achieving the new Canada-wide standard for $PM_{2.5}$ (30 micrograms per cubic metre) will probably reduce the health impacts posed by these small particles by less than 50 per cent.

As a long-term target, the Provincial Health Officer has recommended that there be no involuntary exposure to second-hand smoke – a target of 0 per cent. A comprehensive, province-wide survey of tobacco use was carried out for the first time in 1997. The survey included a number of questions on exposure to second-hand smoke. Updates every three to five years are planned, so that tobacco use and the outcomes of tobacco reduction activities can be monitored on an ongoing basis.

What Actions Can We Take?

Individuals and families can:

- Maintain a smoke-free home, and encourage others to do so.
- Reduce your use of single-occupancy vehicles, by using public transportation, bicycles, and walking.

Governments, industry, and communities can:

- Develop local plans for managing and improving air quality.
- Increase awareness of the effects of wood-burning stoves and backyard burning.
- Reduce motor vehicle emissions, through more stringent emission controls and by encouraging alternatives to single occupancy vehicles, such as public transportation, bicycle paths, and walking trails.
- Continue current efforts to make public places and workplaces smoke-free.
- Set regional goals for increasing the proportion of children who are brought up in non-smoking environments.

Objective

- Improve and maintain the quality and safety of water throughout British Columbia.

Although many people believe that British Columbia's water is pure and clean, the reality is that water is very vulnerable to contamination by activities of humans and other animals. British Columbia has special issues, because many of our water supplies depend on surface waters (rain, creeks, rivers, lakes), where contamination can be difficult to control. About three-quarters of British Columbians depend on surface water supplies, while one-quarter obtain their water from groundwater sources (water from underneath the earth's surface that is pumped by wells or that flows out through springs).

Water quality is difficult to define. Water quality guidelines and objectives have been set for a wide variety of micro-organisms, chemicals, and physical parameters such as turbidity (cloudy appearance). Often, there is more than one guideline or objectives for a given substance. While this may sound confusing, it simply indicates that water may be acceptable for some purposes, but not for others. Water that provides a suitable habitat for fish or other aquatic life may not be fit for humans to drink and vice versa.

A 1998/99 report by the Auditor General found that the British Columbia's drinking-water sources are showing signs of strain. The report concluded that B.C. is not adequately protecting drinking-water sources from human impacts, and that this could have significant cost implications in the future. The Auditor General also identified the need for a better information base on water quality and quantity. One of the recommendations was that the province report annually, at provincial and local levels, on its protection of drinking-water supplies (Office of the Auditor General, 1999). In response to this, the Minister of Health requested the Provincial Health Officer to develop a report on Drinking Water Quality.

The following section presents two indicators: boil-water advisories, which deals with human consumption, and the Water Quality Index, which measures the degree to which the various water uses are protected, threatened, or impaired. Waterborne diseases and waterborne disease outbreaks are discussed under Goal 6 (pages 129 - 131). Additional indicators will be presented in a future Provincial Health Officer's report on Drinking Water.

What Do the Data Show?

- The quality of British Columbia's drinking water is generally very good. Periodically, and in some locations, the quality of drinking water falls below accepted standards.
- The number of boil-water advisories peaked in 1996 and has now levelled off. There are about 200 boil-water advisories in place at any point in time, affecting 7 per cent of the drinking water systems and about 1 per cent of the British Columbia population.
- Over the past 20 years, there have been 29 identified outbreaks of waterborne disease in British Columbia.
- When all water uses – human, aquatic life, and wildlife – are considered, two-thirds of the monitored water bodies are ranked as being in "fair" condition, indicating some impairment of uses and the need for actions to prevent further deterioration.
- Over the past 10 to 20 years, water quality has remained stable or improved in most (80 to 90 per cent) of the sampling stations for which trend data are available.

Boil-Water Advisories

In general, British Columbia's drinking water is abundant, clear, clean, and safe to drink. From time to time, and in certain locations, the quality of drinking water falls below acceptable standards.

Throughout the province, there were 214 boil-water advisories in place in December 1999, affecting 7 per cent of British Columbia's 2,981 drinking water systems. The 214 unsafe water supplies serve approximately 1 per cent of the provincial population.

Boil-water advisories have increased in recent years (Figure 50), in part due to increased identification and testing of water supplies. With the establishment of the Safe Drinking Water Regulation in October 1992, health regions stepped up their efforts to monitor water supplies and to take action accordingly. As local health authorities continued their enforcement and education activities, the number of boil-water advisories peaked in 1996 (248 advisories), then declined and levelled off. The total number of water systems increased in this time period, from 2,207 in 1992 to 2,981 in 1999, so that the percentage of water systems with advisories has increased from 5.5 per cent to 7.2 per cent.

More recently, following a serious outbreak of water-borne E. coli O157:H7 illness in Walkerton, Ontario that caused six deaths, there has been increased awareness of the importance of safeguarding our water supplies. The number of boil-water advisories can be expected to rise in the year 2000, due to heightened awareness and monitoring.

In addition to microbiological contamination, for which boil-water advisories are issued, water may also contain chemical contaminants. As water travels, either above or below the ground, it picks up chemicals such as heavy metals, nitrates, pesticides, gasoline, and radioactive metals. Some of these substances get into drinking water as a result of human activities. Nitrates from livestock wastes, fertilizers, or septic tanks can filter down through the soil and contaminate water, as can spills of chemicals. Naturally-occurring chemicals such as arsenic, fluoride, and hydrogen sulfide gas can cause contamination, too. Some wells in the Sunshine Coast area have arsenic levels that are well above the Canadian Drinking Water Guidelines. Turbidity (cloudiness) affects water quality in certain areas, usually on a seasonal basis. The Provincial Health Officer's report on drinking water quality, to be released in the latter part of the year 2000, will contain more information and statistics about these chemical and physical parameters.

Figure 50

Boil-Water Advisories

B.C., 1986-1999

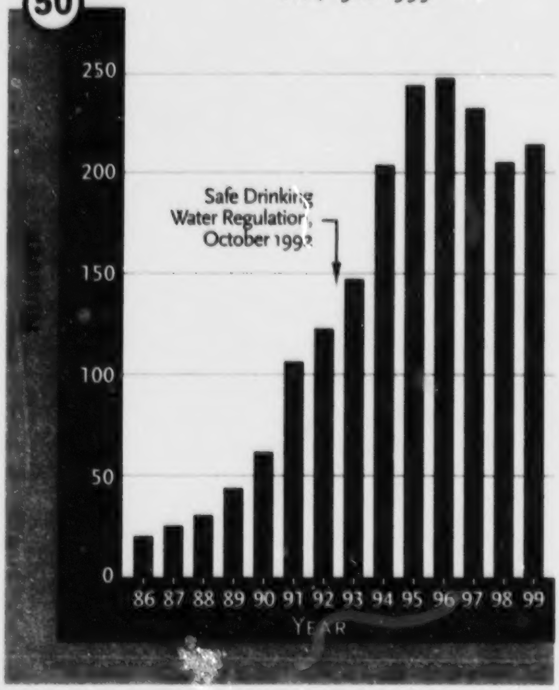
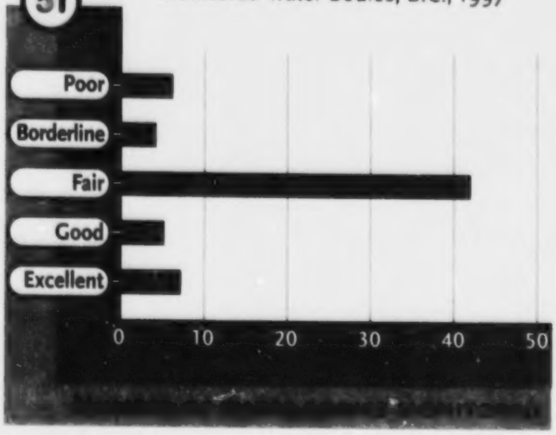


Figure 50 shows the number of advisories in place at one point in time each year. In December 1999, there were 214 advisories, affecting about 7 per cent of the 2,981 water systems and one per cent of the provincial population. The increase in boil-water advisories in recent years is due in part to the new Safe Drinking Water Regulation and increased emphasis on testing and reporting, which leads to identification of more unsafe water supplies. Source: Public Health Protection, B.C. Ministry of Health.

Figure 51

Water Quality Index

Monitored Water Bodies, B.C., 1997



Water Quality Index for 64 water bodies (including streams, rivers, lakes, and marine areas) for which at least three years of data were collected between 1992 and 1997. Source: B.C. Ministry of Environment, Lands and Parks. Water Management Branch, 2000. Data obtained from State of Environment Reporting, http://www.env.gov.bc.ca/sppl/soerpt/

Water Uses

In monitoring water quality, the province considers six water uses:

- drinking
- recreation
- irrigation
- livestock watering
- aquatic life
- wildlife

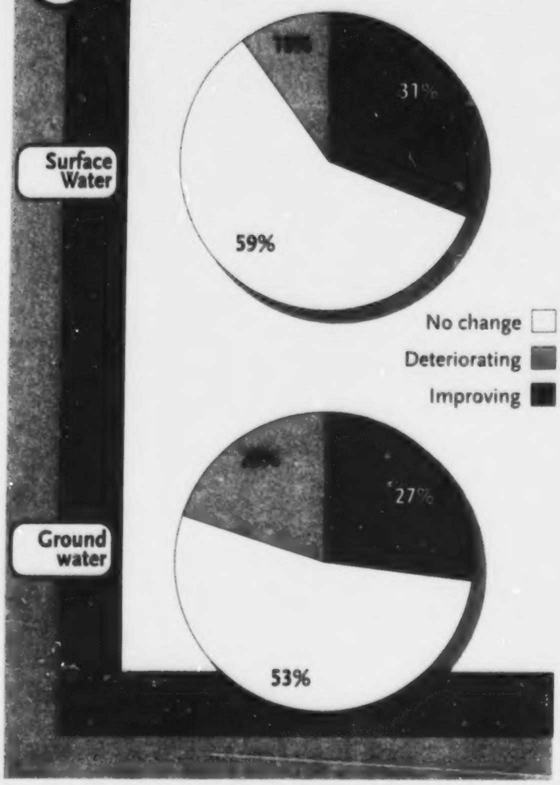
These six water uses require a high quality of water, and must be protected against sources of water pollution such as waste discharges and land use. For more information about water quality objectives, status reports, and the Water Quality Index, visit the water quality web site, http://www.env.gov.bc.ca/wat/wq/wqhome.html

Water Quality Index

Of the 64 water bodies that have been rated for the period 1994 to 1997, two-thirds are categorized as in fair condition (Figure 51). Ten were rated as borderline or poor, which means that most water uses – for humans, aquatic life, and wildlife – were threatened, impaired, or even lost. The pollutants vary from site to site, the main sources being sewage and waste water from urban or residential development, agricultural wastes, and the timber industry. Water quality ratings are generally best in the less populated parts of the province. Only 33 of the 64 monitored water bodies are used for drinking water purposes, and none of those 33 received Poor or Borderline rankings.

Figure 52

Water Quality Trends
68 Water Bodies, B.C.



Results of trend assessments at 133 monitoring stations in 68 water bodies. Source: B.C. Ministry of Environment, Lands, and Parks and Environment Canada, 2000. Water Quality Trends in Selected British Columbia Waterbodies. http://www.env.gov.bc.ca/wat/wqhome.html. The 68 monitored water bodies represent only a small sample of the thousands of water bodies in British Columbia, and do not indicate trends in the province as a whole.

Water Quality Trends

Water quality can also be assessed by examining long-term trends. In a recent report, water quality data collected over the last 10 to 20 years were analyzed to determine changes in water's suitability for fish, wildlife, and human use.

Results showed that, for the most part, water quality has remained stable or has improved (Figure 52). In the 68 water bodies for which trend data were available, 10 per cent of surface water and 20 per cent of groundwater sampling stations showed deteriorating quality. Deteriorating quality has been due to a range of concerns, including pollutants arising from mining and agricultural operations, dams and reservoirs, and high waterfowl populations (B.C. Ministry of Environment, Lands and Parks, & Environment Canada, 2000).

What Targets Are Achievable?

The long-term target is to reduce the need for boil-water advisories, that is, a target of zero advisories. This will be challenging to achieve, given the large number of water systems in British Columbia and the treatments currently in use. Chlorine and other disinfectants can be added to drinking water, killing many of the microorganisms that cause disease. Unfortunately, current methods do not always neutralize hardy parasites such as Giardia *and* Cryotosporidium. *Additional purification methods are available, but costly. Even with full treatment, there is no guarantee that problems will be prevented, but certainly the potential for health risks will be minimized.*

The short-term target adopted by the Ministry of Health's Public Health Protection Branch is to identify all "at-risk" waterworks systems. Regular testing and inspection of drinking water supplies helps to identify problems that, if not addressed, could result in waterborne illness. For statistics about the number of waterworks systems inspected and the hazards found, see Objectives and Indicators for 1998/99, *produced by the Public Health Protection Branch (1999).*

What Actions Can We Take?

Individuals and families can:

- Treat water before drinking it, if your community has a boil-water advisory.
- Get your water tested, if you get your water from a private well.
- Participate in community planning and local growth strategies.

Governments, industries, and communities can:

- Work together on decisions and actions that impact water quality.
- Develop risk assessment tools to help communities make decisions about upgrading their water systems before problems occur.
- Continue to address problems in water bodies with poor, borderline, and fair ratings through actions such as watershed restoration, pollution control, and water treatment.

Objective

- Improve and maintain a sustainable, safe and nutritious food supply for all British Columbians.

Like water, food is vulnerable to contamination from bacteria, chemicals, and other hazards. Contaminants can enter the food supply through a number of different routes and sources – when crops or livestock are being grown, during processing and packaging, during handling and storage, or when food is being prepared in restaurants and in homes.

Our food supply needs continued monitoring and protection to ensure that it is safe for consumption. This section presents two indicators that provide information about hazards in our food supply: hazards found in restaurants and other food facilities, and food samples that exceed guidelines for contamination. These indicators also illustrate some of the standards and methods we have in place to regulate and inspect the food supply.

When food is not properly protected, illness may result. Intestinal illnesses, many of which are caused by contaminated food or water, are discussed under Goal 6, Disease and Injury Prevention (pages 129 - 131).

What Do the Data Show?

- Regular inspections of restaurants and other food premises help to identify unhealthy conditions or practices. On average, one "critical hazard" is found for every two facilities inspected, with inadequate refrigeration of food and improper cleaning of equipment and utensils being the most common hazards.
- Food testing is one way to assess contamination in the food supply. Efforts are being made to increase the number of samples collected and analyzed.

Critical Hazards in Food Premises

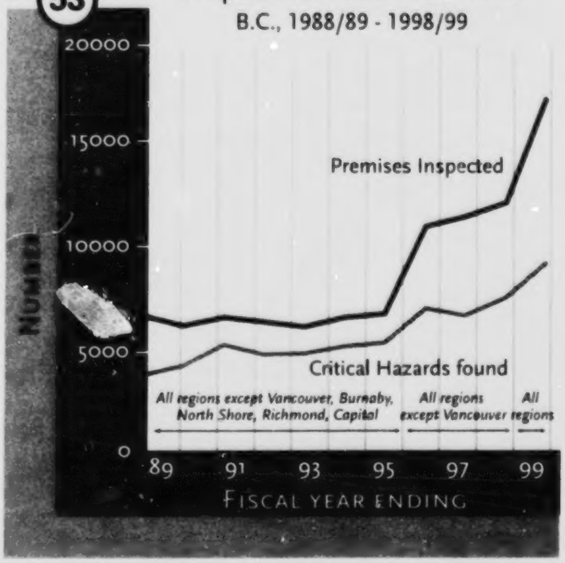
British Columbia has a large number of food premises – 25,959 as of March 1999. This figure includes restaurants and other establishments that serve food to the public, food stores, and other facilities as defined by the Food Premises Regulation.

9,197 critical hazards were found in the 16,954 premises that were inspected in 1998/99 (Figure 53), a rate of 54 hazards for every 100 facilities inspected. Over the past ten years, the rate has ranged from 54 to 80 per 100 facilities. Some of this variation is due to data availability. Capital and Richmond regions, for example, report critical hazard rates that are lower than the provincial average, and data for these two regions were not included in provincial summary data prior to 1995/96.

Figure ⑤③

Health Hazards in Inspected Food Premises

B.C., 1988/89 - 1998/99



Number of critical hazards (health hazards that require immediate attention) identified on routine and complaint inspections. Food premises include restaurants and other establishments that serve meals to the public, stores, and other facilities as defined by the Food Premises Regulations. Data for 1998/99 are for all regions, data for 1995/96 to 1997/98 are for all regions of the province except Vancouver; data for earlier years are for provincial health units only. Source: Public Health Protection Branch, B.C. Ministry of Health.

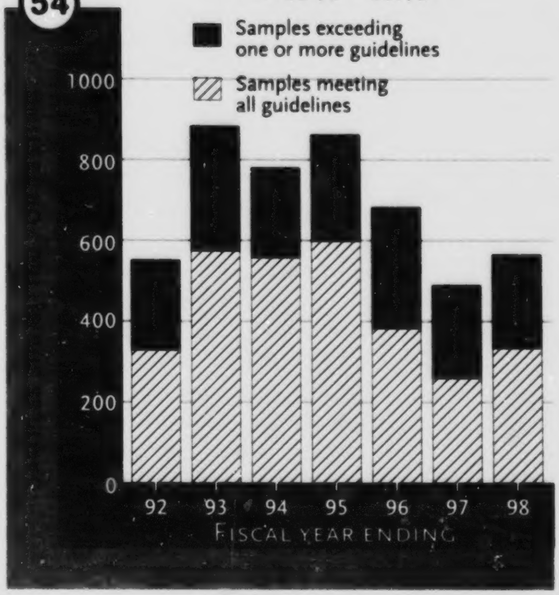
The most common critical hazards found are improper cooling and refrigeration of food (about 40 per cent of critical hazards) and improper cleaning of equipment and utensils (26 per cent). Although most of these hazards are corrected by the time of a follow-up inspection, these numbers show that potentially unsafe conditions are not uncommon, and that ongoing monitoring and education is needed.

Food Quality Samples Exceeding Guidelines

In 1998, 41 per cent of the samples of cooked ready-to-eat food exceeded one or more guidelines for bacteria and sanitary quality. Guidelines and definitions have changed over the years, so previous years of data are not precisely comparable, but they do show that a considerable proportion of samples are not meeting food quality standards (Figure 54). In 1998, sandwiches, dairy foods, and salads accounted for about half of the samples that failed to meet guidelines (BC Centre for Disease Control, Provincial Laboratory, 1999). Samples are taken when a problem is suspected. Therefore, these results do not mean that 41 per cent of the general food supply is at risk.

Another approach to food testing is known as the "total diet survey". Using this approach, Health Canada has conducted four Market Basket Surveys to estimate the levels of chemicals to which Canadians are exposed through their food. In these surveys, which began in 1969, samples of foods commonly eaten are prepared in the laboratory just as they would be at home. The foods are then tested for chemical contaminants, such as lead, dioxins, and pesticides. Using information about Canadians' eating habits, scientists then estimate the amounts of contaminants we consume in our total diet (Health Canada, 1997; Conacher & Mes, 1993).

Figure 54 Food Quality Testing
B.C., 1991/92-1997/98



Source: Public Health Protection Branch, B.C. Ministry of Health. Objectives and Indicators reports.

In terms of chemical contaminants, Health Canada's Market Basket Surveys have shown that the levels of contaminants to which Canadians are exposed are far below national and international guidelines. The concentration of some contaminants, including DDT and PCBs, has decreased dramatically since the 1970s (Health Canada, 1997). Although food samples are collected from urban areas across the country, Market Basket Survey data are not available separately for British Columbia.

What Targets Are Achievable?

In an ideal world, no critical hazards would occur. For the short term, the Public Health Protection Branch has set two targets with regard to inspection of food premises:

- *All food premises in the province should receive a routine inspection each year.*
  This target has proven difficult to achieve in many areas of the province. For the province overall, 65 per cent of food premises received a routine inspection in 1998/99. Regionally, inspection coverage ranged from 20 per cent (Coast Garibaldi) to a high of 81 per cent (Capital). To make the best use of available resources, health authorities are moving toward a risk management approach, which means that inspections are being targeted to high-risk facilities.
- *All identified critical hazards will be corrected by the time of follow-up inspection.*
  In 1998/99, most (84 per cent) critical hazards were eliminated by the time of the next inspection, but about 16 per cent remained.

At this time, no targets have been set for the proportion of food samples exceeding guidelines. Efforts are being made to expand the food testing program. The Public Health Protection Branch has set a target to increase the average number of food samples submitted by health authorities to 53 per year; the average number of samples submitted in 1997/98 was 31.

What Actions Can We Take?

Individuals and families can:

- Practice safe food handling and storage practices. For some practical tips, see *Ten Easy Steps to Make Safe Food,* http://www.hlth.gov.bc.ca/hlthfile/hfile59.html

Food establishments can:

- Encourage all food handlers to complete food safety programs such as FOODSAFE.
- Pay particular attention to cooling and refrigeration of food and cleaning of equipment and utensils – the most common health hazards found during food premises inspections.

Health authorities can:

- Maintain and improve food safety, inspection, and testing programs.

Objective

- Improve and maintain the quality of land and soil across British Columbia.

Soils can become contaminated through pesticides and other agricultural activities, oils and asphalt applied to roads, industrial pollution, or garbage. Where there is extensive irrigation, soil can become salinated (high in salt concentration).

Soil contaminants pose a risk when people accidentally ingest soil particles or as a result of their migration into air, water, and food. Most soils have contamination to some degree, however small, although the extent of contamination varies widely from place to place.

At this time, we do not have indicators that provide an overall assessment of soil quality or land degradation. This section provides an update on one of the indicators presented in the Provincial Health Officer's 1997 annual report: blood lead levels in children.

What Do the Data Show?

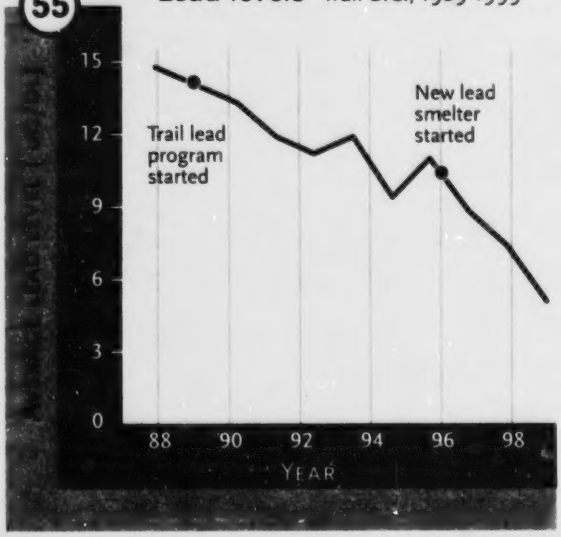
- Although levels are still higher than in other areas of the province, average blood lead levels for Trail children are continuing to decline. The decline is linked to a reduction in lead concentrations in the air.

Blood Lead Levels in Children

In the area surrounding the city of Trail, lead in the soil and house dust have been issues. Soil and dust have become contaminated through smoke and dust from a smelter, which has existed in Trail since the turn of the century, when little was known about the effects of lead. Young children are most affected by lead, because of their habit of putting toys and fingers in their mouths.

Average blood lead levels for Trail children declined slightly between 1991 and 1996, followed by a more pronounced decrease since 1997 after the old lead smelter was shut down and a new lead smelter started (Figure 55). The percentage of children with lead levels of 15 ug/dL or higher (the Trail Lead Program "level of concern") has also declined, from 42 per cent of Trail children in 1991 to 6 per cent in 1999.

Figure 55 Trend in Children's Blood Lead levels Trail B.C., 1989-1999



Trail Lead Program. Average blood lead levels are age and area-adjusted for children (age 6 to 60 months) who were tested for the first time between 1989 and 1999.

The improvements in Trail lead levels have been achieved through cooperative efforts spearheaded by a task force that includes representatives from the government ministries of health and environment, municipal government, the smelter, the union, the school district, parents, and the local environmental network.

What Targets Are Achievable?

A decade ago, approximately 5 per cent of Canadian children had blood lead levels over 10 ug/dL. At that time, the Federal-Provincial Committee on Environmental and Occupational Health recommended that community programs to reduce lead exposure be considered if the proportion of children with levels above 10 ug/dl reached 10 per cent – double that of the general child population. Today, the risk to children's health from lead is much lower than in the past, thanks to efforts to decrease the levels of lead in gasoline, paint, industrial emissions, and products intended for children's use. However, there are no provincial data available for tracking trends in children's blood lead levels.

The Trail Lead Program's long-term goal is to have 90 per cent of Trail children with blood lead levels under 10 ug/dL. In 1999, 79 per cent of Trail children tested had levels that met this goal.

What Actions Can We Take?

Governments, industry, and communities can:

- Continue community efforts to reduce lead exposure in Trail.

The health system can:

- Develop a cost-effective way to carry out periodic surveys of children's exposure to lead.

Objectives

- Decrease damage to the global atmosphere.
- Minimize the negative impact of human settlement and activity on the long-term sustainability of natural resources.

Human health and well-being are ultimately dependent on the health of the physical environment. If nature's resources are used up, living and working conditions will not be sustainable. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development is about responsible use of all of society's resources: natural, human, and economic.

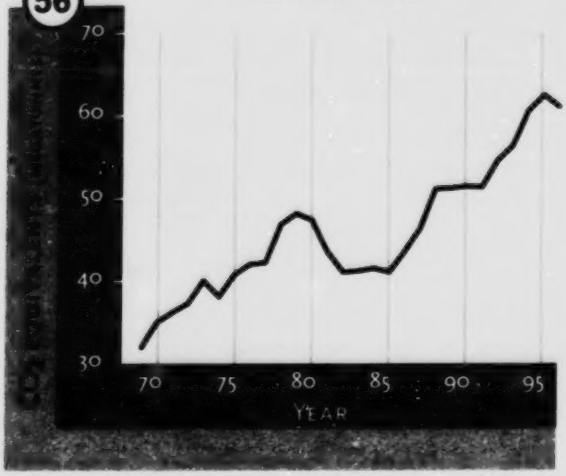
This section presents three indicators: greenhouse gas emissions, which illustrates the impact of human activities on the global atmosphere; total and per capita energy consumption; and land in protected areas, which measures our commitment to protecting British Columbia's ecosystems for future generations.

What Do the Data Show?

- Human activity continues to pollute the atmosphere. Greenhouse gas emissions – mostly carbon dioxide from vehicles and other energy use – increased by 21 per cent between 1990 and 1997.
- Much of the increase in British Columbia's energy use and pollution is due to population growth. However, we consume more energy per capita than most other countries, and only 16 per cent of our energy comes from alternative sources.
- 11.4 per cent of British Columbia's land base is in protected areas. We are very close to achieving the international target of 12 per cent.

Figure 56 Greenhouse Gas Emissions

B.C., 1970 - 1997



Source: Environment Canada, 1999. Data obtained from B.C. Ministry of Environment, Lands and Parks, State of Environment Reporting, http://www.env.gov.bc.ca/sppl/socrpt/

Greenhouse Gas Emissions

Greenhouse gas emissions – mostly carbon dioxide from vehicles and other energy use – increased by 21 per cent between 1990 and 1997 (Figure 56). Population growth accounts for a significant portion of the increase in greenhouse gas emissions within the province. However, on a per capita basis, British Columbians add more carbon dioxide to the atmosphere than do citizens of most European and Asian countries.

Our transportation patterns, industrial activity, and high levels of consumption all contribute to British Columbia's relatively high per capita emissions of carbon dioxide. Increased use of personal vehicles has contributed significantly to the rise in greenhouse gas emissions. Transportation is the single largest source of greenhouse gas emissions (Figure 57), and emissions from gasoline and diesel cars and trucks increased by almost 20 per cent between 1990 and 1997. In 1998, British Columbians drove an average of 10,200 kilometres per capita, up from the 7,000 kilometres driven in 1970.

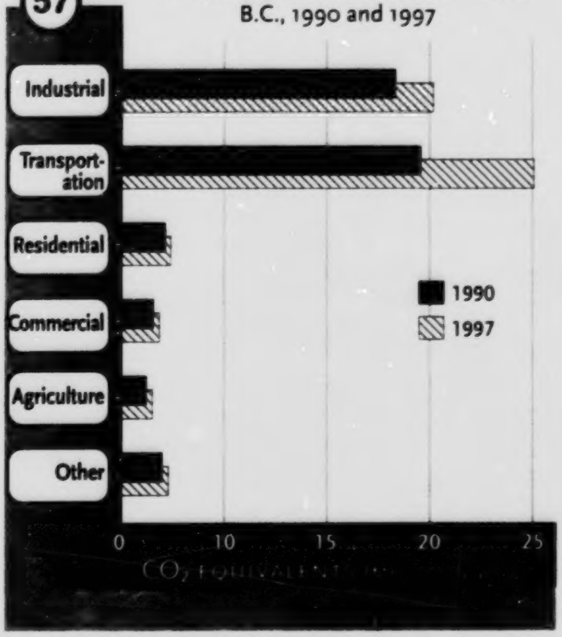
Total and Alternative Energy Consumption

On a per capita basis, Canada uses more energy than most countries. Some of the factors that contribute to our high level of energy use are vast distances that encourage car use, cold climate, an energy-intensive industrial base, and relatively low energy prices.

From 1981 to 1998, the total amount of energy used in British Columbia increased by one-third. Most of this increase was due to population growth. Per capita, energy use has remained fairly constant, declining somewhat in 1997 and 1998 due to a decrease in fossil fuel production.

Figure 57 Sources of Greenhouse Gas Emissions

B.C., 1990 and 1997

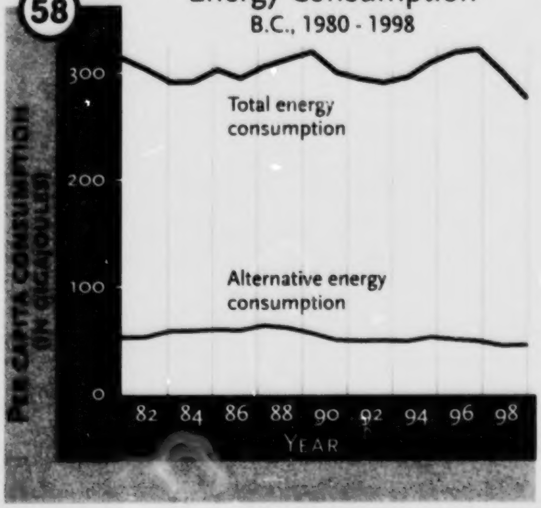


Source: Environment Canada, 1999, Canada's Greenhouse Gas Inventory. Data obtained from B.C. Ministry of Environment, Lands and Parks, State of Environment Reporting, http://www.env.gov.bc.ca/sppl/soerpt/

About 16 per cent of the energy consumed in British Columbia comes from alternative energy sources – biomass (primarily wood waste and other biological matter), solar, wind, small hydroelectric generators, and fuel cells – that do not deplete natural resources or endanger the environment. The proportion of energy derived from these alternative technologies has not changed significantly since 1981 (Figure 58).

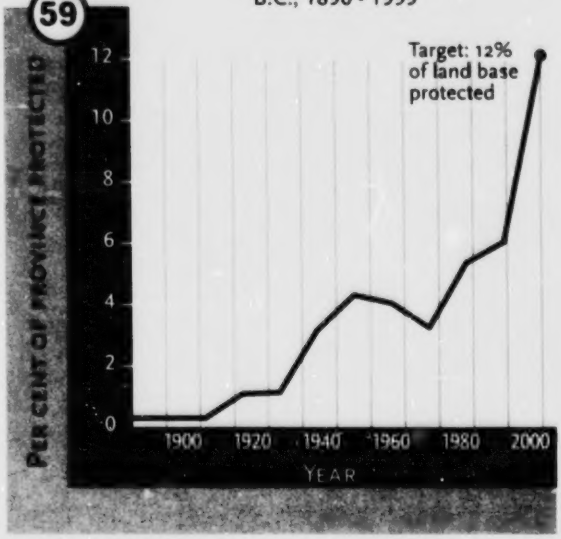
The provincial government has created a Green Economy Initiative to promote energy sources that are less stressful on the environment. Green Economy projects focus on renewable energy, the environmental industry, ecotourism, and "tax shift reform". Environmental tax-shifting involves shifting part of the tax burden away from activities we want to encourage, like jobs and investment, and onto activities we want to discourage, like pollution and wasteful use of resources. An example is a pilot project that encourages the closure of beehive burners and the development of alternative uses for wood waste, such as ethanol production. More information is available from the Green Economy Secretariat, http://www.gov.bc.ca/ges.

Figure 58 Total and Alternative Energy Consumption B.C., 1980 - 1998



Source: Energy Statistics Handbook, CANSIM (the Canadian Socio-economic Information Database produced by Statistics Canada), 1999 and BC STATS population estimates. Energy consumption figures obtained from B.C. Ministry of Environment, Lands and Parks, State of Environment Reporting, http://www.env.gov.bc.ca/sppl/soerpt

Figure 59 Protected Areas B.C., 1890 - 1999

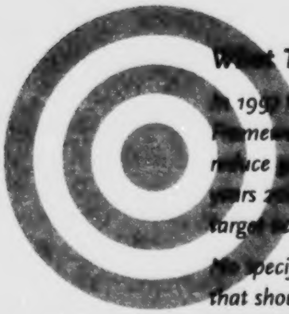


Source: British Columbia Land Use Coordination Office, 1999, and BC Parks 1995. Data obtained from B.C. Ministry of Environment, Lands and Parks, State of Environment Reporting, http://www.env.gov.bc.ca/sppl/soerpt/

Land in Protected Areas

In 1999, 10.8 million hectares – about 11.4 per cent of the British Columbia's land area – was dedicated to parks, ecological reserves, and other protected areas. This is very close to achieving the provincial, national, and international goal of protecting 12 per cent of our land base.

In the 1990s, the amount of land in protected areas increased significantly (Figure 59). Public consultations and other stakeholder input played an important role in identifying areas to protect.



What Targets Are Achievable?

In 1997 Canada participated in the development of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. When ratified, this will commit Canada to reduce greenhouse gas emissions to 6 per cent below 1990 levels, some time between the years 2008 and 2012. British Columbia is participating in a national program to achieve this target across Canada.

No specific targets have been set for energy consumption or for the proportion of energy that should be derived from alternative sources. However, developing alternative energy technologies can benefit the economy as well as the environment. Studies show that money invested in alternative energy will produce at least 50 per cent more jobs than an equivalent investment in conventional energy development (B.C. Ministry of Environment, Lands and Parks, State of Environment Reporting, 2000).

Canada and other countries have set a goal of having 12 per cent of land in protected areas, in accordance with recommendations by the United Nations Commission on Environment and Development. British Columbia has adopted this international goal, and aims to have 12 per cent of its land base (11.35 million hectares) protected by the year 2000.

What Actions Can We Take?

Individuals and families can:

- Reduce your use of single-occupancy vehicles, by using public transportation, bicycles, and walking.
- Participate in community planning and local growth strategies.

Governments, industries, and communities can:

- Continue to promote measures to reduce greenhouse gas emissions, such as reducing the distance travelled per capita, increasing fuel efficiency, the promoting the use of alternative fuels.
- Continue efforts in land use planning, with strong regional and sectoral input.
- Develop better ways to measure and communicate issues related to sustainability of the physical environment and their connection to human health.

Health Services

Goal 4: An effective and efficient health service system that provides equitable access to appropriate services.

All British Columbians have the right to receive health services – preventive and treatment-oriented – that will help them achieve health. In British Columbia, a wide range of services are available to meet people's health needs, with most (73 per cent) of the health spending coming from public funds.

Health services are the largest government expenditure – about 38 per cent of the provincial budget. To make the best use of public resources, we need to ensure that people have access to cost-effective services when and where they are needed, and that services lead to improved health. This chapter presents information to illustrate three aspects of health system performance:

- Accessibility
  Are services available, accessible, and reaching those who can benefit from them?
- Doing the Right Things Right
  Are we providing appropriate care – the right service, at the right place, at the right time, and with the right provider?
- Improving Health
  Are health services leading to improved health?

More detailed discussion and statistics about the performance of British Columbia's health system are contained in the Ministry of Health's *Annual Report*. The Ministry's 1998/99 report, released in June 2000, describes how the ministry is fulfilling its goals in the areas of health care accessibility, quality, affordability and sustainability, governance, management and accountability, and contributing to overall good health.

A further source of information on health system performance is *Health Care in Canada 2000: A First Annual Report*. This report, published by the Canadian Institute for Health Information and Statistics Canada in April 2000, examines trends in Canada's health care system. It also provides comparative data on health and health services for 63 regions across Canada. For more information about indicators for acute care hospitals, readers may wish to refer to a recent report by the Canadian Council on Health Services Accreditation (1999). This report presents results of a national, two-year study to assess the reliability and usefulness of a set of six generic acute care indicators.

The *World Health Report* 2000 makes a first attempt to compare the world's health systems. Countries were ranked according to various aspects of performance, including how effectively governments spend their money on health, how well the system prevents illness instead of just treating it, and how fairly minorities and other special populations are treated. In this first analysis, which aims to stimulate debate about ways of measuring health system performance, Canada was ranked 30 out of 191 countries (World Health Organization, 2000).

Objectives

- Maintain commitment to a health service system that is based on the principles of universality, accessibility, comprehensiveness, portability and public administration.
- Improve the process of allocating resources for health services across the province, to ensure that it is equitable, understandable, and based on population characteristics and needs.

Accessibility is one of the fundamental principles of Canada's health system. The *Canada Health Act* guarantees access to medically-necessary services provided by physicians or in hospitals. Access to these and other services has been a priority of the British Columbia government, which has committed itself to addressing three aspects of accessibility: geographic access, financial access, and waiting times (B.C. Ministry of Health, 1999).

This section presents information about access to four highly effective health services: immunization, cancer screening, smoking cessation services, and regular dental care. For services of proven cost-effectiveness, the utilization rate – the proportion of the population who receive the services – provides one way of measuring accessibility. Low rates of usage can indicate problems with availability, access, or provision of services. Also included in this section is an indicator about people's perception of needs for care that were not met.

For many health services, accessibility is difficult to define and measure with available data. We usually know how many people receive a given service, but more is not necessarily better. A high rate of surgeries or treatments doesn't tell us whether those services were the most appropriate way to meet people's needs. Similarly, a low rate of hospital utilization does not necessarily indicate a problem with access, because we don't know what the ideal rate of hospital use would be. Even wait lists and waiting times, which may seem to be good indicators of access, are problematic. Unless carefully and accurately compiled, wait list data can be misleading, and for many health services, there is little evidence to show what a reasonable wait time should be[3]. The challenges in finding good indicators of health system performance is discussed further under "Doing the Right Things Right", pages 93 - 103.

Another way to consider accessibility is to look at whether health dollars and resources are shared equitably throughout the province. With regard to funding allocation, no indicators or updates are included in this year's report. In 1996, a funding methodology was developed that would allocate resources to regions based on differences in population size, age composition, and health status (B.C. Ministry of Health, Regional Funding and Support, 1996). The funding formula was not implemented at that time due to changes in the regionalization structure. The ministry's *Strategic Directions* document identifies the need for a more understandable funding allocation process, and the work that began in 1996 may be picked up again in the future.

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3 Information about wait lists for hospital-based surgeries and treatments is available from the Surgical Wait List Registry, http://www.hlth.gov.bc.ca/waitlist/indes.html. This web site also provides data on wait times by surgical category, by hospital, and by physician.

What Do the Data Show?

- Some groups are not receiving the best possible benefits from immunization. In some regions of the province, fewer than 80 per cent of preschool children are fully immunized. Province-wide, only 56 per cent of seniors were immunized against influenza in 1998/99.
- Two-thirds of women have regular Pap smears. Access to breast cancer screening is increasing each year, but the participation rate – 44 per cent – has not yet reached the target of 70 per cent.
- About 64 per cent of British Columbians (age 12 and over) have made a recent dental visit. Access to regular dental care is closely related to people's income level and whether or not they have dental insurance.
- About one-third of family physicians actively counsel their patients to stop smoking, as evidenced by their participation in the BC Doctors' Stop-Smoking Program.
- Six per cent of British Columbians say they needed health care but were unable to receive it, at some point in the past year.

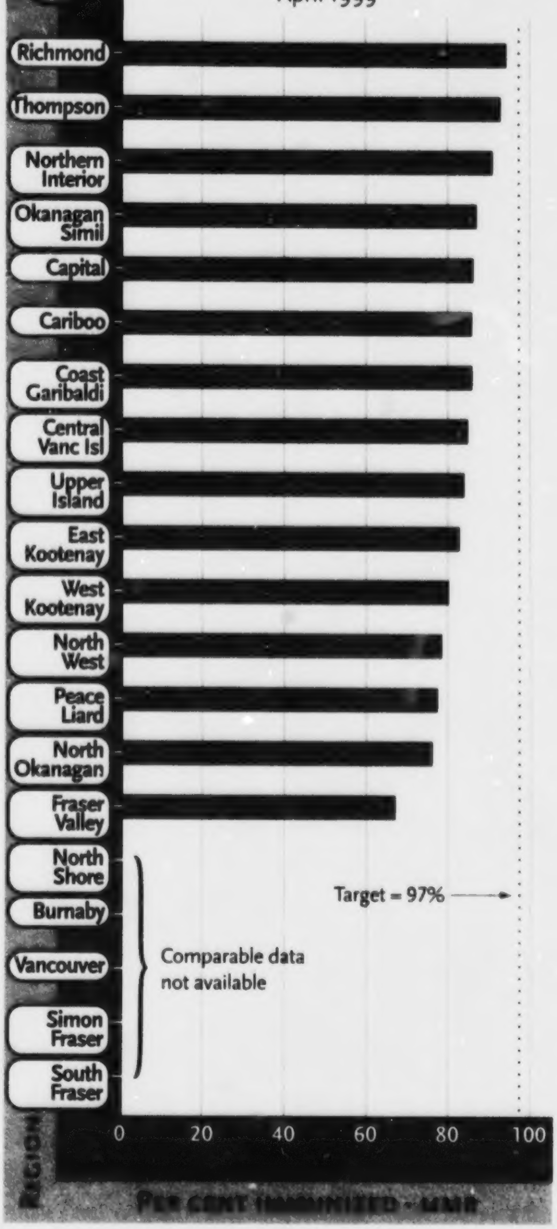
Childhood Immunizations

More than 80 per cent of B.C. children are immunized by the time of their second birthday. In some regions and communities, almost all two-year-olds are fully immunized. Richmond and Thompson regions consistently have high immunization rates, approaching the national target of 97 per cent (Figure 60). But there are other areas of the province where the level of coverage needs to be improved. Low rates indicate some regions are having problems providing this highly effective service and/or problems tracking and reporting their results.

For some areas of the province, immunization statistics for two-year-olds are not available, in part due to difficulties in gathering statistics from doctors' offices. A province-wide immunization registry, currently being introduced, will be able to provide more complete information in the future.

Figure 60 Immunization Rates, Two-Year-Old Children

April 1999



MMR: Measles, Mumps, Rubella. Source: Data are submitted by health authorities based on an audit of Child Health Records. A provincial summary is compiled by Preventive Health Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

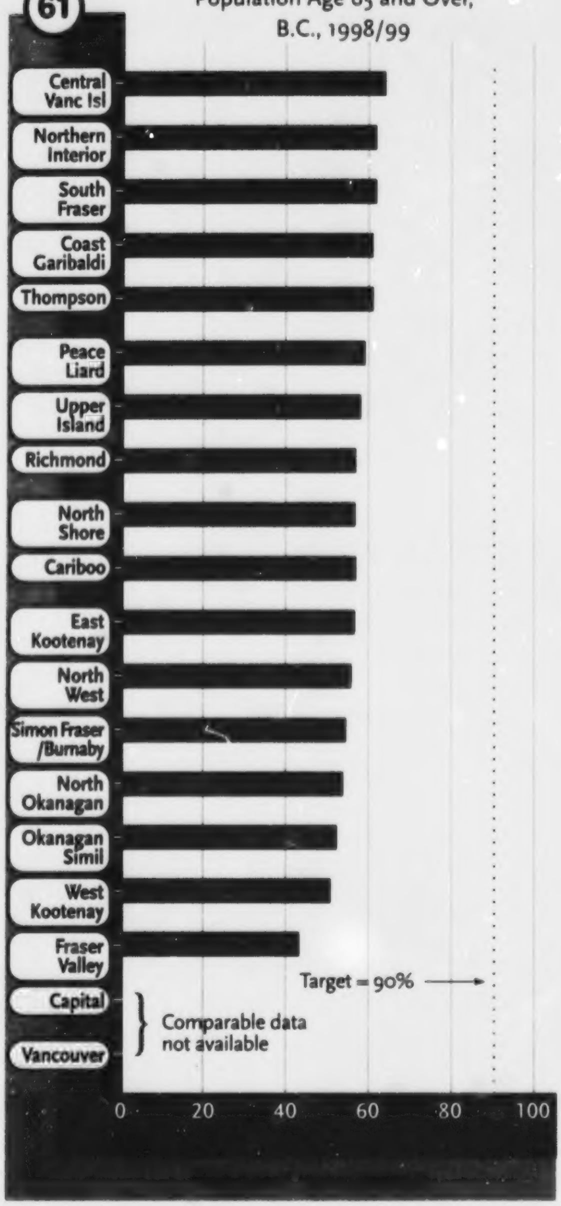
Influenza Immunization

An estimated 56 per cent of British Columbians age 65 and older had an influenza immunization during the 1998/99 flu season. These figures are based on data submitted by local health authorities, and do not include all regions of the province (Figure 61). While there are limits to the current data collection methods, results are similar to rates based on population surveys. In the *National Population Health Survey 1996-97*, 53 per cent of British Columbians age 65 and older reported having had an influenza vaccination within the year prior to the survey, and British Columbia's results were close to the national average (51 per cent).

Although influenza immunization rates are not precise, it is clear that we are far below the target of 90 per cent coverage for seniors living in the community. For seniors living in long-term care facilities, immunization rates are higher – 84 per cent received influenza immunization in 1998/99 – but this vulnerable group would be better protected if more health care workers were immunized. In 1998/99, the immunization rate for staff of care facilities was only 32 per cent, up from 28 per cent the previous year, but still far too low.

Figure 61 Influenza Immunization Rate

Population Age 65 and Over, B.C., 1998/99

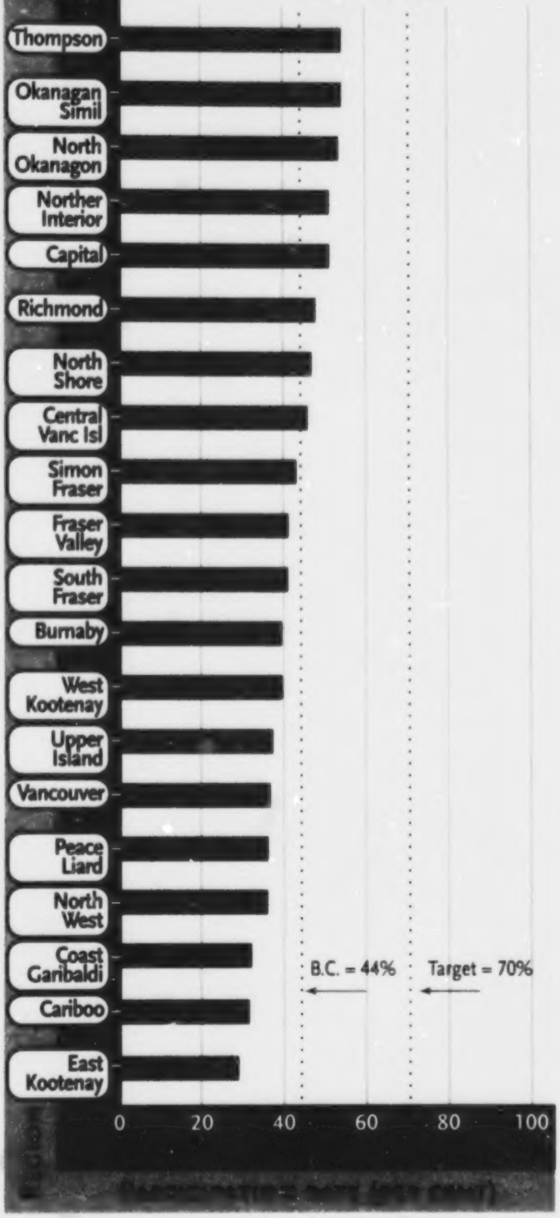


Source: Epidemiology Services, B.C. Centre for Disease Control Society and BC STATS population estimates. Obtained from the Health Data Warehouse, B.C. Ministry of Health.

Figure 62

Screening Mammography Participation Rates

Women Age 50-74, 1998



Per cent of women age 50-74 who attended the Screening Mammography Program of BC at least once in the two year period 1997 to 1998. Source: Screening Mammography Program of British Columbia, BC Cancer Agency. Data obtained from the Health Data Warehouse, B.C. Ministry of Health. Note: Some women receive screens at centres that are not affiliated with the Screening Mammography Program, so are not included in these data.

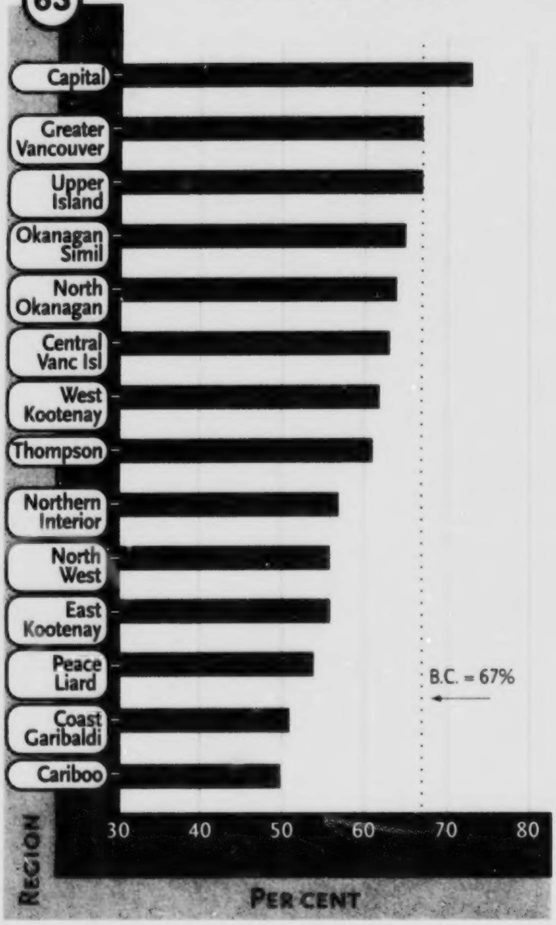
Screening Mammography

The Screening Mammography Program of B.C. began in 1988 and has expanded each year. As of March 1999, more than 95 per cent of women had access to a screening mammography facility at least once a year, within a 30-minute commute from their home (Screening Mammography Program of B.C., 1999).

More women are attending screening mammography centres each year. In 1996 and 1997, 35 per cent of women age 50-74 (the age group most likely to benefit) had been screened. In 1997 and 1998, this increased to 44 per cent for the province overall, with the Thompson and Okanagan regions having the highest participation rates (Figure 62). Although screening rates are increasing, there is still some distance to go to meet the target of 70 per cent participation.

Figure 63 Pap Smear Participation Rates

Women Age 20-69, 1998



Per cent of women age 20-69 who had at least one Pap smear in the 30-month period July 1996 to December 1998. Greater Vancouver includes Burnaby, North Shore, Richmond, Fraser Valley, South Fraser Valley, and Simon Fraser regions. Source: 1999 Annual Report, Cervical Cancer Screening Program, a program of the BC Cancer Agency.

Pap Smears

As of December 1998, about two-thirds of women age 20-69 had had a Pap test within the past 30 months. By region, pap smear rates ranged from 50 per cent (Cariboo) to 73 per cent of women (Capital Health Region) (Figure 63).

British Columbia established the first population-based Pap smear program in the world. Since its inception, the rate of cancer of the cervix in B.C. has been reduced by 85 per cent. Most cervical cancers now diagnosed are either of a type not so easily found by Pap smear (non-squamous cell type) or occur in women who have never, or not within the past three years, been screened by a Pap test.

Although British Columbia's Pap smear program has been highly successful, there are opportunities to increase participation rates among groups of women that are less likely to receive regular Pap smears: older women, Aboriginal women, recent immigrants, and women in low-income households.

Dental Visits

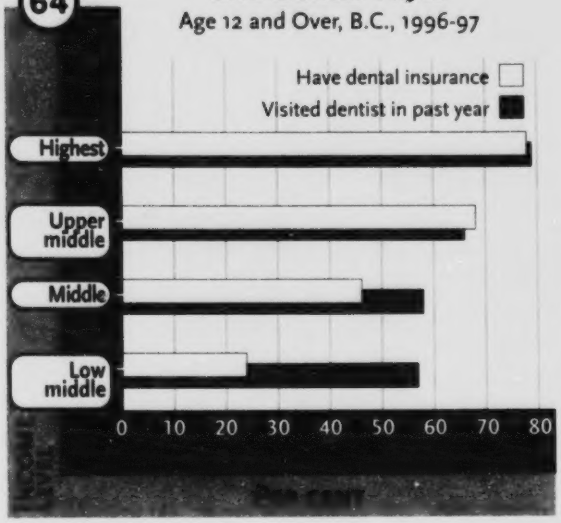
About six out of every ten British Columbians (age 12 and older) visited a dentist in the year before the 1996-97 *National Population Health Survey*. Young people (age 12-24) were much more likely to have visited a dentist within the past year (72 per cent) than were seniors (50 per cent).

Income level and dental insurance can have a major effect on the accessibility of regular dental care. High-income British Columbians are more likely to have made a recent dental visit (79 per cent) and to have dental insurance (78 per cent) than those in the low or lower-middle income groups. In the lowest income groups, 57 per cent of people reported visiting a dentist in the past year, and 24 per cent said they had dental insurance (Figure 64).

Figure 64

Dental Insurance and Dental Visits

Age 12 and Over, B.C., 1996-97



Source: Statistics Canada. National Population Health Survey 1996-97. Public Use Microdata Files. Prepared by Planning and Evaluation, B.C. Ministry of Health. For all income groups combined, 58 per cent of British Columbians said they had dental insurance, and 64 per cent said they had visited a dentist in the past year.

Dental insurance may be more common than these *National Population Health Survey* figures suggest. In British Columbia, the provincial government subsidizes dental coverage for certain low-income groups. Some survey respondents may not have considered their government coverage as "insurance" when asked whether they had dental insurance. Although insurance coverage might be under-estimated, the data in Figure 64 do suggest that many British Columbia adults are experiencing financial or other barriers to regular dental care.

Among children, dental health status has improved significantly over past three or four decades and is now considered to be excellent. B.C. is one of three provinces (Ontario and Newfoundland are the others) that offer special preventive dentistry programs for needy children. Today, most children – an estimated 90 per cent – attend their family dentist on a regular basis, and two-thirds of kindergarten children are caries-free. Education programs, screening programs, dental insurance, improved access to regular dental care, and exposure to fluorides in dental products have all contributed to this vast improvement in children's dental health. Because most dental disease is preventable, preventive efforts are particularly important – for children, and for adults, too.

Although children's dental health status is generally very good, reaching at-risk groups is an area that requires attention. Tooth extractions, fillings, and other dental procedures are the most common procedures that children receive in hospitals[4], with Status Indian children having dental surgery rates that are four times that of other B.C. children. Other at-risk groups include immigrant children and those from disadvantaged families. Most tooth extractions and restorative dental work can be avoided, if children develop healthy dental behaviours and have access to regular dental care.

Smoking Cessation

About one-third of family physicians actively counsel their patients to stop smoking, as evidenced by their participation in the BC Doctors' Stop-Smoking Program. This program, run by the British Columbia Medical Association, helps physicians take a systematic approach to smoking cessation (Bass, 1996). Using program materials, doctors who participate routinely ask their patients about smoking, advise smokers to stop and young people not to start, assist those who are ready to stop through counselling or nicotine replacement, and follow up all smokers and those who have recently stopped.

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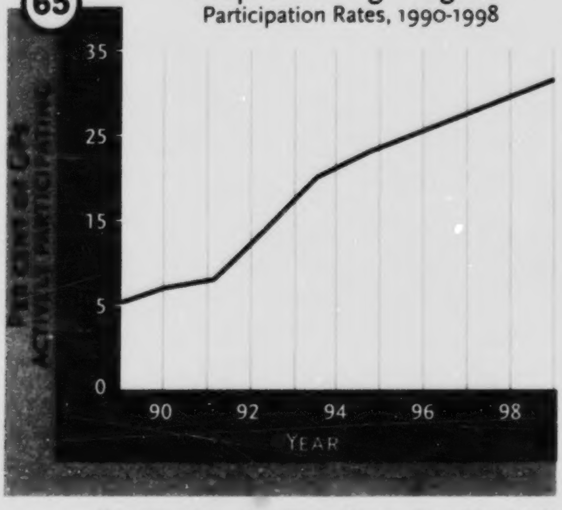
[4] A hospital setting is often required for children's dental work, due to their young age and the length of time required for treatment.

Figure 65 BC Doctors' Stop-Smoking Program

Participation Rates, 1990-1998



The number of general practitioners who are active participants in the BC Doctors' Stop-Smoking Program, as a proportion of those practicing two days or more per week in general practice (estimated to be 2,850). Source: BC Doctors' Stop-Smoking Program, B.C. Medic: ' Association.

Physician participation has increased each year since the program was established (Figure 65). However, continued efforts will be required before this approach to smoking cessation is available through all doctors' practices in the province.

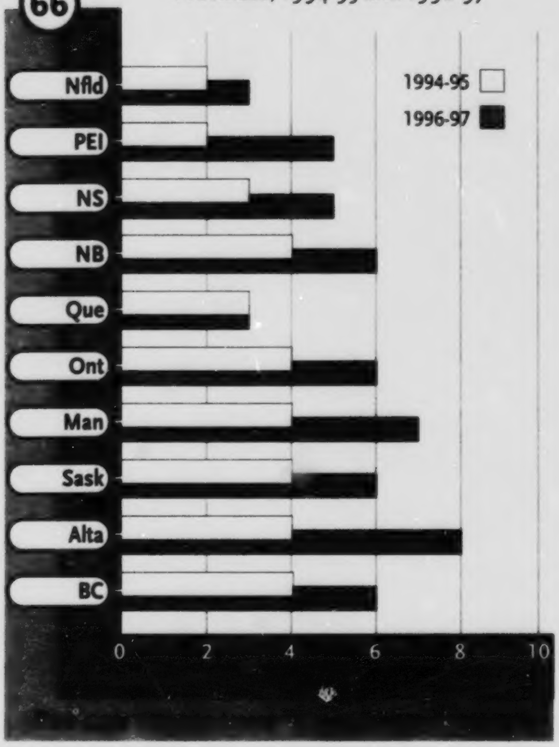
Other programs that help B.C. smokers who wish to quit include the *Quitline, Kick the Nic 2000*, and *Fresh Start*. The *Quitline* is a toll-free number (1-877-455-2233) operated by the Canadian Cancer Society and available to all B.C. residents. Callers can receive advice and support from a professional counsellor. *Kick the Nic 2000* is a new program designed in B.C. to help youth stop smoking. *Kick the Nic* was developed in consultation with B.C. teens and was launched in high schools in September 1999. *Fresh Start* is a group cessation program offered by the Canadian Cancer Society.

Unmet Health Care Needs

In 1996-97, 6 per cent of British Columbians said that they had at least one unmet health-care need during the previous year. This is a slight increase from 1994-95, when 4 per cent reported unmet needs. Increases occurred in all provinces except Quebec (Figure 66).

Figure 66 Unmet Health Care Needs

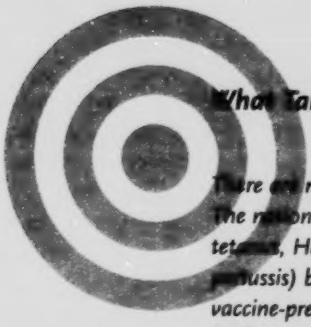
Provinces, 1994-95 and 1996-97



Per cent of population (age 12 and over) who said they required health care but did not receive it, on at least one occasion in the past year. Source: Statistics Canada. National Population Health Survey. In Report on the Health of Canadians: Technical Appendix and Statistical Report on the Health of Canadians. Advisory Committee on Population Health, 1996 and 1999.

The number of British Columbians reporting unmet needs in this survey was low, too low to permit any analysis by age or other characteristics. However, for Canada overall, there were differences by income group. Those in the lowest income group were more likely to report unmet health care needs, suggesting that there may be financial barriers to receiving certain types of care.

The *National Population Health Survey* did not attempt to verify the unmet needs or to identify them beyond a general classification. When asked why they did not receive the care they needed, respondents gave reasons such as cost, care not available where or when required, waiting time too long, or scheduling problems.



What Targets Are Achievable?

There are national goals, objectives, and targets for immunization of infants and children. The national target is to have 97 per cent of children immunized against diphtheria, polio, tetanus, Haemophilus influenzae type b (Hib), measles, mumps, and rubella (95 per cent for pertussis) by their second birthday. In British Columbia, the national goals for the control of vaccine-preventable diseases of infants and children have been endorsed by the B.C. Centre for Disease Control and the Ministry of Health, but not officially adopted by the province. The Provincial Health Officer has recommended formal adoption of the national goals.

Annual influenza immunization is recommended for all adults age 65 and older, persons with chronic diseases in all age groups, and health care workers. The National Advisory Committee on Immunization recommends that programs aim to immunize at least 90 per cent of eligible recipients. A target of 90 per cent has also been recommended for British Columbia in previous reports by the Provincial Health Officer. A comprehensive immunization campaign targeted at seniors and health care workers is being planned for the upcoming influenza season. This campaign aims to increase coverage rates to 80 per cent for seniors in the community, 90 per cent for residents of long-term care facilities, and 80 per cent for health care workers.

The Screening Mammography Program of B.C. has a long-term target to screen 70 per cent of women age 50-74 every two years. This target is based on international evidence showing that regular attendance by 70 per cent of women is needed before a screening program will have optimal effect in reducing breast cancer death rates. A 25 per cent or greater reduction in the death rate is expected to occur seven to ten years from the point when 70 per cent screening coverage is achieved (Health Canada, 1999).

The goal of the cervical cancer screening program is to ensure that all women in the target age group receive regular Pap smears. Pap smear data and special studies show that participation rates are much lower among older women, Aboriginal women, immigrant women, and women in low-income households.

There are no provincial targets for the proportion of the adult population who visit their dentist each year. One possible target would be to reduce the gap between income groups, so that all British Columbians are able to obtain dental care at the rate of the highest-income group; in 1996-97, 79 per cent of high-income British Columbians visited a dentist in the past year, compared to 56 per cent of those with low income level. Among children, an estimated 90 per cent attend their family dentist on a regular basis. Areas that should be targeted for improvement are (1) reaching Aboriginal children, immigrant children, and other groups that experience high rates of tooth decay and (2) prevention of nursing bottle and early childhood tooth decay.

The BC Doctors' Stop-Smoking Program aims to recruit more physicians each year, with a long-term goal of reaching most or all family physicians in the province. With the family physician base well-established, the program will focus on recruiting medical specialists, particularly obstetricians, anesthesiologists, psychiatrists, cardiologists, respirologists, and surgeons. The Quitline *and* Kick the Nic 2000 *are new smoking cessation programs, and specific targets for accessibility and program usage have not yet been set.*

With our system of universal health care, it is expected that the overall level of unmet needs will remain quite low, and that there will be few differences according to people's age, income level, place of residence, or other characteristics.

What Actions Can We Take?

Individuals and families can:

- Know which vaccines you and others in your family should be getting. Make sure all family members have an immunization record, and that immunizations are up-to-date.
- Know which preventive and screening exams are recommended for your age, gender, and risk factors. Blood pressure checks, Pap tests, screening mammography, vision tests, and dental check-ups are examples.

The health system can:

- Strengthen immunization programs, by acting on the 81 recommendations contained in the *Provincial Health Officer's Annual Report* 1998, a feature report on immunization.
- Continue to improve access to mammography screening throughout the province, under the auspices of the Screening Mammography Program.
- Target Pap tests to groups with low participation rates, e.g., Aboriginal women, recent immigrants, and other groups known to be at high risk for cancer of the cervix.
- Improve access to dental health education and regular dental care, through universal access programs or through specific support to groups without insurance.
- Continue to expand the availability of smoking cessation services.

Objective

- Increase access to services that have been proven cost-effective but are not uniformly or consistently used. Decrease utilization of health services, technologies, and medication which the evidence indicates are inappropriate, ineffective, or over-utilized.

Quality health services, when and where they are needed, make an essential contribution to our health. At the same time, unnecessary or ineffective health care can harm our health and can use up public resources that could be better spent elsewhere to improve health. Given the vast array of health services currently and potentially available, how can we ensure that the care provided is relevant to clients' needs and is based on established standards? The following section focuses on some of the specific indicators that can be used to measure whether we are doing the right things right – providing the right service with the right provider at the right time and in the right place. The section concludes with a discussion about changing the way that primary care services are organized and provided.

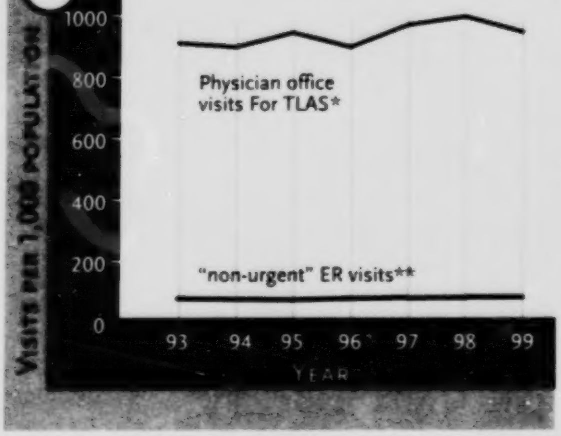
What Do the Data Show?

- We need to do a better job in educating people about how to treat common illnesses. About one-quarter of doctors' office visits are for colds, headaches, backaches, and other symptoms that are often appropriate for self-care.
- Fewer people are being admitted to acute care hospitals each year. However, hospitals are still being used to treat illness episodes that could be prevented or treated on an out-patient basis, based on indicators of "preventable admissions" and conditions that "may not require hospitalization".
- On average, patients have shorter stays in hospital than in the past. Too often, though, people remain in hospital because they are waiting for a residential bed or other type of care. Getting enough of the right services – and matching people to them – has been recognized as a challenge. An overhaul of British Columbia's continuing care system is under way.
- Some people with mental illnesses are not receiving the follow-up services they need. Of the 19,914 cases admitted to acute care hospitals for psychiatric reasons in 1998/99, only two-thirds had contact with a community mental health centre or a private physician within 30 days of hospital discharge.
- Clinical practice guidelines, developed by physician working committees, can improve the quality of care and help to ensure that health dollars are spent wisely. In 1998/99, the Ministry of Health saved an estimated $4.9 million due to protocols and guidelines for diagnostic tests. These savings were diverted to other needed medical services.
- We don't know why there are such large regional differences in the rates of surgical procedures such as cesarean section and breast-conserving surgery for breast cancer.
- Fewer antibiotics are being prescribed. However, some people are still receiving antibiotics that they do not necessarily need. Antibiotics were prescribed for almost two-thirds of the children who visited their doctor because of ear infection. Yet, in most cases, children's ear infections will get better on their own – with or without antibiotics.
- Today, we have more and better information about the performance of the health system than in the past. But there is still much that we don't know – about the health services people receive, whether they are being provided in a coordinated way, and whether they lead to improved health.
- Our primary care system is not well-designed for the needs of today's population. Major gains in provider and patient satisfaction, as well as more effective use of health care dollars, could be achieved if we change the way in which primary care is configured.

Figure 67

Opportunities for Self-Care

B.C., 1993-1999



*TLAS: Time-Limited Acute Symptoms such as colds, back problems, headaches, and skin rashes, that could be considered appropriate for self/home treatment.
**Non-urgent ER visits: Physician services for Level 1 emergency care - services that require only an abbreviated history, exam, and treatment, and thus are potentially treatable in a setting less intensive than an emergency room. Source: Professional Support Branch, Medical Services Plan. In Partnerships for Better Health: A Self-Care Pilot Project. Final Evaluation Report, May 2000.

Opportunities for Self-Care

In 1999, 1.7 million British Columbians made more than 3.8 million doctors' office visits for time-limited acute symptoms (TLAS) – common illnesses that are considered appropriate for self or home care, such as colds, influenza, back ache, headache, skin rashes. TLAS conditions account for more than one-quarter (26 per cent in 1999) of all general practitioner office visits.

Also in 1999, there were 335,423 emergency room visits – about one-third of all ER visits – that could be considered non-urgent and, therefore, potentially treatable at home or in a less intensive setting. Non-urgent emergency room visits have been generally increasing, in absolute numbers and as a rate per 1,000 population (Figure 67).

Certainly, not all of these health care visits could be avoided through self-care. When people get sick outside of office hours, there may be no alternative except to go to the local emergency room, especially if they live in a rural or remote community. However, these data show that there are opportunities to better educate the public about appropriate treatment of common diseases and to improve access to care in settings that are less intensive than the emergency room.

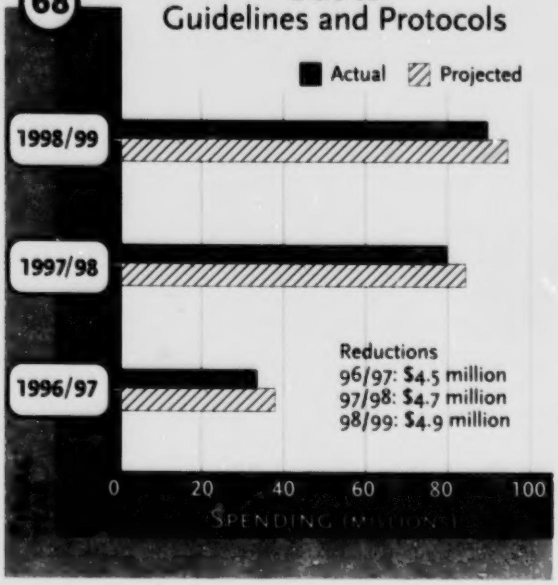
Tools such as self-care handbooks, internet-based information banks, and the provision of telephone advice can help people know when to seek medical attention and what constitutes appropriate treatment of common health problems. A pilot project to evaluate the effectiveness of such tools took place in the Capital Health Region in 1998 and 1999 (Mullett, 2000). Results indicated that the program was beneficial, and further expansion of the program is currently being considered.

Use of Protocols and Guidelines

Experience shows that protocols and clinical practice guidelines can improve the appropriateness and consistency of the health care people receive. The Guidelines and Protocols Advisory Committee has developed 28 protocols and guidelines, covering a range of medical tests and treatments such as routine prenatal ultrasound, cholesterol testing, urinalysis, and ankle x-ray. The protocols and guidelines provide recommendations for managing these medical situations, based on scientific evidence and the expert judgement of physicians.

Often, the introduction of a protocol or guideline results in fewer tests being performed. The number of urinalysis samples, for example, dropped by 50 per cent when the urinalysis protocol was introduced in January 1996, and usage has remained at this lower level ever since. Sometimes, usage remains constant or even increases after a protocol or guideline is adopted. This can occur if most practitioners were already following best practice guidelines, or if the guideline increases awareness of indications for a test or service that was previously under-used.

Figure 68 Estimated Reduced Spending Due to Guidelines and Protocols

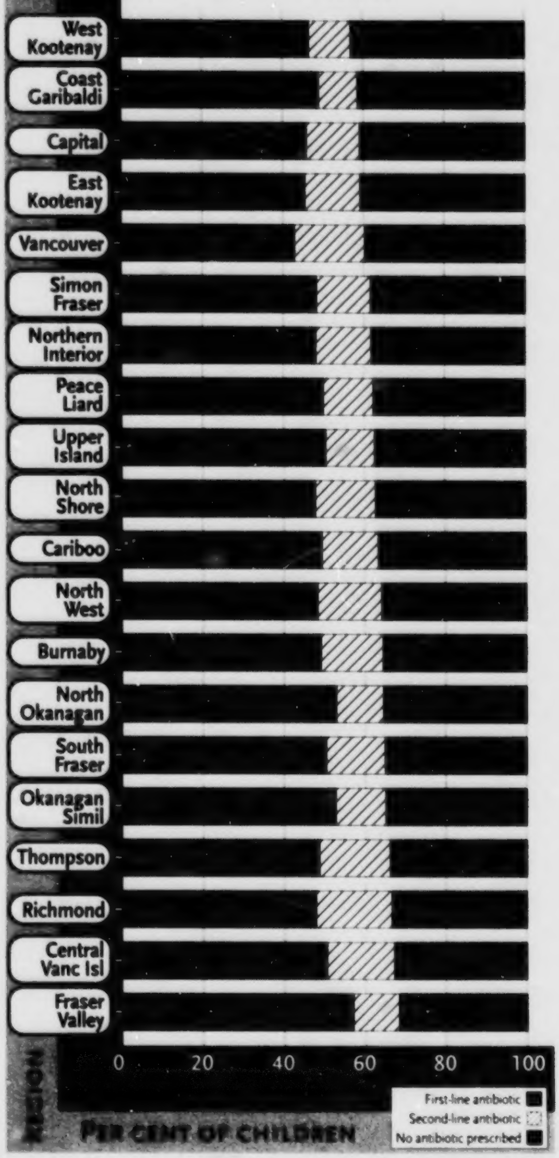


Estimates are based on the difference between actual utilization and projected utilization of fee items for which protocols and guidelines have been adopted by the Guidelines and Protocols Advisory Committee. Protocols and guidelines cover a range of medical services such as routine pre-operative testing, prenatal ultrasound, urinalysis, and ankle x-ray. Source: Management Support Branch, Strategic Planning and Development, Medical Services Plan. Unpublished tables, January 2000.

The primary purpose of protocols and guidelines is to improve quality and appropriateness of care. While it is not possible to determine the impact on each individual's care, to date there has been no evidence of adverse effects on patients as a result of protocols and guidelines.

Reduced spending is an additional benefit. In 1998/99, an estimated $4.9 million was saved due to protocols and guidelines (Figure 68). These savings were diverted to other needed medical services.

Figure 69 Antibiotic Prescribing for Children with Ear Infections B.C., 1998/99



Most (64 per cent) children with ear infections were prescribed an antibiotic. Yet, up to 80 per cent of children's ear infections will get better on their own, whether one treats with antibiotics or not.

Per cent of children age 0-14 diagnosed with otitis media (ICD9 381-382) who received a prescription for antibiotics after visiting a general practitioner and per cent who received first-line (first choice) or second-line (alternative) treatment on their first prescription. Source: Medical Services Plan and PharmaNet. Prepared by Planning and Evaluation, B.C. Ministry of Health. First-line and second-line antibiotics are those specified in the Ontario Anti-infective Review Panel's Anti-infective Guidelines foCommunity-Acquired Infections, 2nd edition. Toronto, ON: Publications Ontario, 1997.

Antibiotic Prescribing

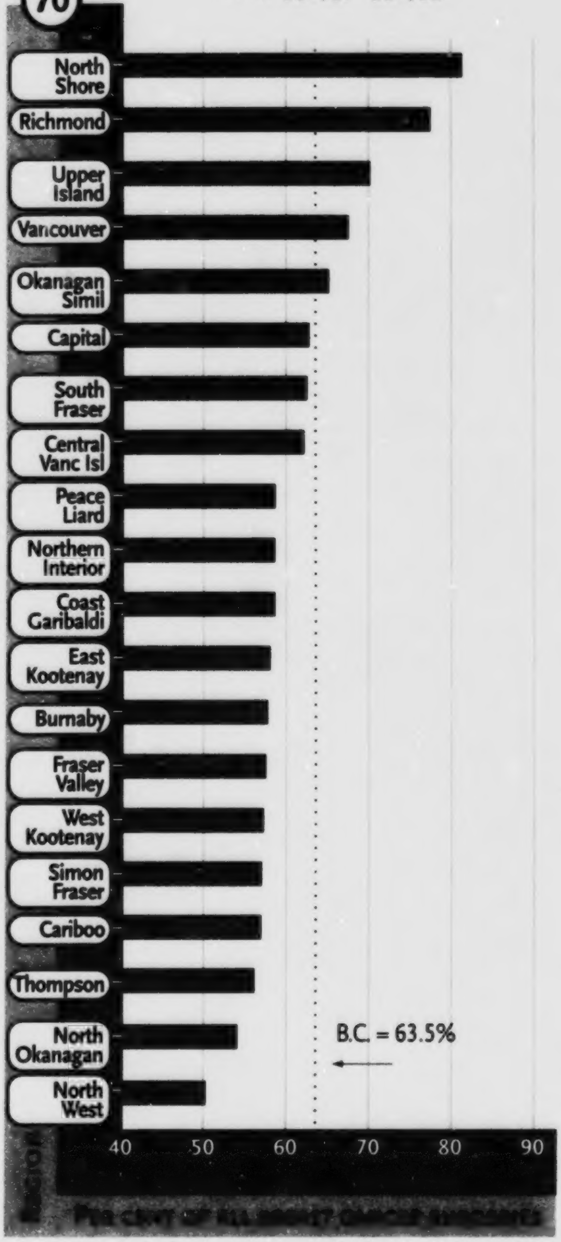
The rate of antibiotic prescribing is declining. While the total number of drug prescriptions per capita has been going up, the number of prescriptions per capita for antibiotics has been going down – from nearly one prescription for each B.C. resident in 1996 to 0.8 prescriptions in 1999. This is an encouraging trend, because it is known that antibiotics have been overused in the past. Before, it was common to prescribe antibiotics to treat upper respiratory symptoms and ear infections. Treatments change, as we learn more about diseases and drugs. Today, we know that in most cases, people with colds, sore throat, flu, or ear infections will get better on their own, whether treated with antibiotics or not.

While many doctors and patients have changed their patterns of prescribing and using antibiotics, many people are still receiving antibiotics that they do not necessarily need. Of the 116,558 B.C. children who visited a family doctor because of otitis media (ear infections) in 1998/99, almost two-thirds (64 per cent) received a prescription for antibiotics. Amoxicillin, the first-line antibiotic recommended in the anti-infective guidelines, was prescribed for most of these children, but a substantial proportion – 22 per cent of the children receiving antibiotics – received second-line or other treatments on their first prescription. The rate of antibiotic prescribing for children's ear infections was quite similar in regions throughout the province (Figure 69).

Prescribing for children's ear infections is used as an example, because ear infections are one of the most common problems that infants and young children experience. In addition, antibiotics are prescribed for children more often than for any other age group (University of British Columbia, 1998). However, appropriate antibiotic treatment is important for all types of infections. People who are treated properly get better more quickly. Appropriate treatment is important in the longer term, too, because too much use of antibiotics can lead to organisms that are resistant to first-line drug treatments. Getting the right treatment also ensures that we are getting the best value for our health dollars. Spending on drugs that are unnecessary or too costly means less money is available for other health services that improve health.

Figure 70 Breast-Conserving Surgery

B.C., 1996/97-1998/99

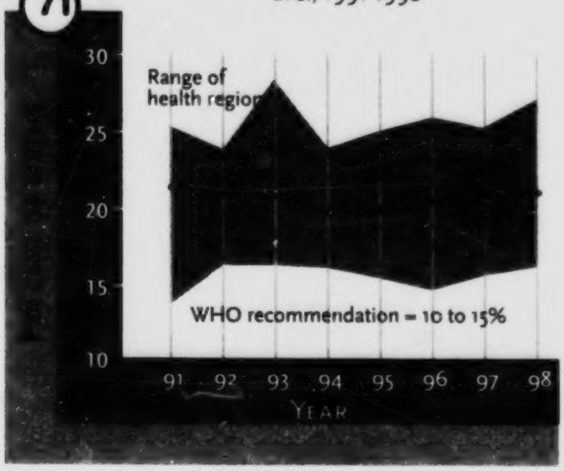


Breast-conserving surgery as a proportion of all breast cancer surgeries.
Data are for acute, rehabilitation, and day surgery levels of care.
Source: Morbidity Database, Information and Analysis Branch, B.C. Ministry of Health.
Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

Figure 71

Cesarean Delivery Rates

B.C., 1991-1998



Source: B. C. Vital Statistics Agency, Ministry of Health

Breast-Conserving Surgery

Until the mid-1980s, mastectomy (removal of the whole breast) was the usual treatment for early breast cancer. Today, breast-conserving surgery (lumpectomy), followed by radiation treatment, is the recommended procedure for most women (The Steering Committee on Clinical Practice Guidelines for the Care and Treatment of Breast Cancer, 1998).

Breast-conserving surgery (lumpectomy) has become more common. In 1998/99, almost two-thirds (65 per cent) of women received this breast cancer surgery, rather than mastectomy. Within the province, there are regional differences. Breast-conserving surgery is more common in the North Shore (81 per cent of breast cancer surgeries), compared to 50 per cent in the North West (Figure 70). Regional variations could be due to difference in women's preferences, physicians' patterns of practices, and/or access to radiation treatment.

Cesarean Deliveries

Cesarean section is the most common major surgical procedure in British Columbia, performed in one of every five deliveries. British Columbia has a cesarean delivery rate that is higher than the Canadian average and higher than most other industrialized countries. The reasons for this higher rate are not clear.

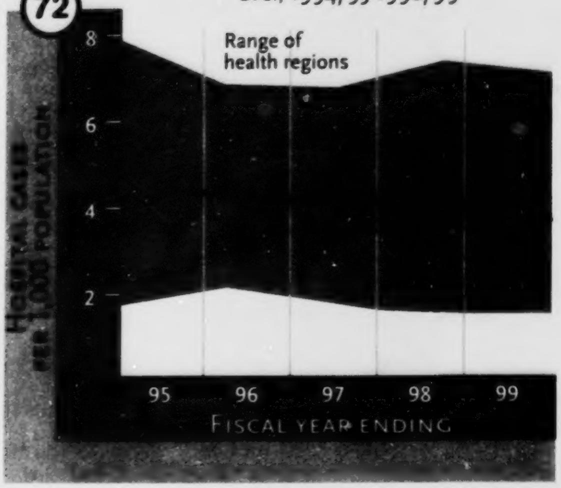
Within the province, cesarean rates vary from region to region (Figure 71). Women who live in the North Okanagan and Thompson regions consistently have the highest rates (23 to 26 per cent over the past five years), while rates among Burnaby women are consistently the lowest (14 to 17 per cent). Cesarean delivery rates vary even more, sometimes dramatically, from hospital to hospital and from physician to physician. Patient risk factors such as older maternal age, pre-term birth, and multiple births do not explain the variations in rates, based on previous studies. Furthermore, each hospital's cesarean rates are relative stable from year to year (Provincial Health Officer, 1996). This suggests that different practice patterns in hospitals must explain at least some of the variation. High rates may also mean that more women are requesting cesareans. The use of fetal electronic monitoring and other technology may increase parents' anxiety, and they may be more likely to ask for cesarean delivery if difficulties arise during labour.

If British Columbia's cesarean delivery were lowered to 15 per cent, there would be 2,600 fewer abdominal surgeries performed each year. The BC Reproductive Care Program (1999) has developed more than 20 obstetrical and neonatal guidelines, on topics such as birth technology and vaginal birth after cesarean. This information is disseminated to physicians and nurses around the province. However, without a major incentive to change, British Columbia's cesarean rate is likely to remain higher than Canada and other industrialized countries, with some fluctuation as staff change and new attitudes develop.

Figure 72

Preventable Admissions

B.C., 1994/95-1998/99



Acute care hospitalizations for conditions that can usually be managed in the community, without the need for hospital admission. Includes cases with a primary diagnosis of diabetes, alcohol and drug-related conditions, neurosis, depression, hypertension, asthma. Source: Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

Preventable Admissions

In 1998/99, there were about 15,000 hospital admissions for diabetes, asthma, hypertension, neurosis, depression, and abuse of alcohol or other drugs. These health problems, sometimes called "ambulatory care sensitive conditions", are conditions that can usually be managed in the community without the need for admission to hospital, if patients receive timely diagnosis, treatment, education, and support.

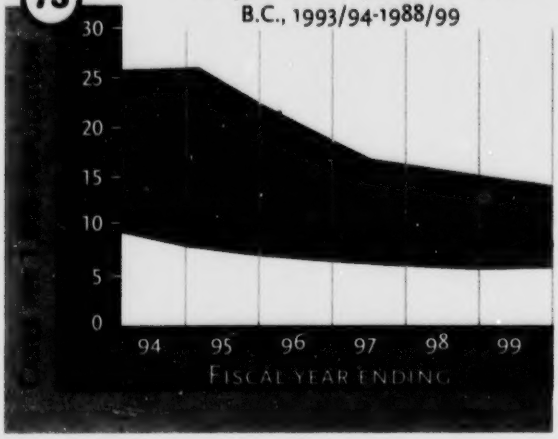
The rate of these preventable admissions has been declining, but there are large differences between regions (Figure 72). The Lower Mainland generally has low rates of preventable admissions, while northern and Island/Coast regions have rates that are up to twice the provincial average.

A high rate could indicate problems with availability of front-line care in doctors' offices, clinics, or other community settings – problems that might be more common in remote communities than in major cities. A high rate could also indicate that these diseases are more common in certain communities. At this time, we lack data to determine whether chronic conditions such as diabetes and asthma are more frequent in specific areas of the province.

Figure 73

Hospital Cases That May Not Require Hospitalization

B.C., 1993/94-1988/99



Source: Morbidity database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

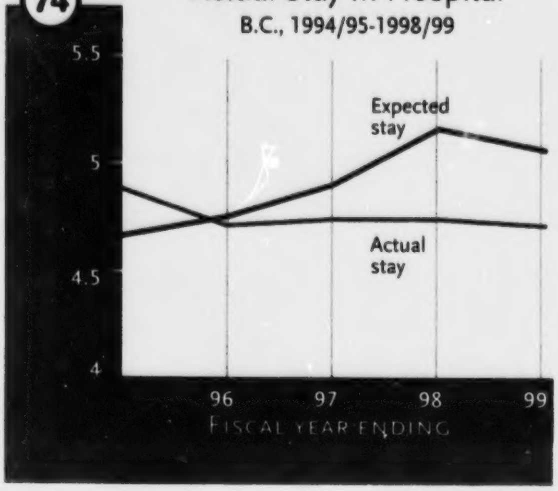
May Not Require Hospitalization

More than 33,000 cases – 8.5 per cent of all in-patient cases and 4 per cent of hospital days – were classified as May Not Require Hospitalization (MNRH) in 1998/99. This does not mean that all 33,000 patients falling in the MNRH category could have been treated on an out-patient basis. It does mean, however, that some patients admitted to hospital did not necessarily need a hospital bed. Examples are children admitted for sore throat (who could be observed on an out-patient basis), tonsillectomies (that could be performed as day surgery), or sprains and strains (that could be treated at home or in a doctors' office).

Through continued efforts to reduce unnecessary hospitalizations, May Not Require Hospitalization rates have been dropping steadily. Over the past six years, the cases rate has declined by 43 per cent, with decreases occurring in all regions of the province (Figure 73). MNRH rates are highest in the north and Kootenays regions, in part due to geography. Where patients must travel considerable distance to hospital and where there may be fewer alternatives to hospital care, physicians may be more likely to recommend hospital admission.

Figure 74 Expected Compared To Actual Stay In Hospital

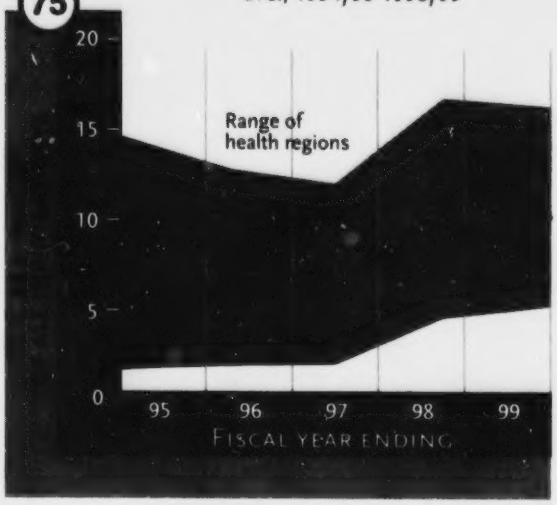
B.C., 1994/95-1998/99



Source: Morbidity Database.
Information and Analysis Branch, B.C. Ministry of Health.
Data obtained from the Health Data Warehouse, B.C. Ministry of Health

Figure 75 Alternate Level of Care Days

B.C., 1994/95-1998/99



Proportion of hospital-days where a patient occupying an acute care hospital bed was well enough to have been cared for elsewhere.
Source: Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Unpublished tables, October 1999.

Expected Compared to Actual Stay

On average, patients are spending less time in hospital, overall and relative to the standard for their particular conditions (Figure 74). In 1998/99, the average patient stayed in hospital 4.7 days, while 5.1 days was the expected stay for typical patients with these conditions. This may mean that hospitals are becoming more efficient, by using pre-admission clinics, early discharge programs, home nursing care, and other ways of minimizing hospital stays.

Within the province, Vancouver and Capital regions have actual stays that are quite close to the expected. Residents of several non-urban regions (North West, Okanagan, Fraser Valley, Coast Garbaldi) have actual lengths of stay that are consistently shorter than expected. This is somewhat surprising, because we might expect rural areas to have fewer options for care outside of hospitals. However, this is a first look at this Expected Compared to Actual Stay measure, and more discussion will be needed to interpret these findings.

Alternate Level of Care Days

Too often, people remain in acute care hospitals while waiting for another type of care. In 1998/99, 266,000 hospital-days – about 10 per cent of days spent in hospital – were used by patients who were finished with the acute care phase of their treatment and who were waiting for placement in another program or facility. This is equivalent to 730 individuals in acute care beds, 365 days per year. The proportion of patients and days designated as Alternate Level of Care has been increasing over the past five years, in most areas of the province (Figure 75).

With a growing and aging population, British Columbia's health system is facing a major challenge – making the right mix of services available and matching people to the services they need, whether that be care in the home, in a residential care facility, or other setting.

Based on a 1999 study of British Columbians who needed long-term care, we know that home care can be an effective and cost-saving alternative to hospitals and nursing homes, particularly for clients whose health is fairly stable (Hollander, 1999). Another study released in 1999 was the *Review of Continuing Care Services in British Columbia*. This major review pointed out the need for more residential care beds, expanded community support services, and an overhaul of the assessment and placement process (Steering Committee of the Review, 1999). Acting on this report's recommendations should result in better care, as well as relieving pressure on British Columbia's acute care hospitals.

Community Follow-up After Hospitalization

Most people who are hospitalized for psychiatric reasons make contact with the health care system once they are discharged, but others are not receiving the follow-up services they need to manage their mental health problems and to help prevent re-admission to hospital.

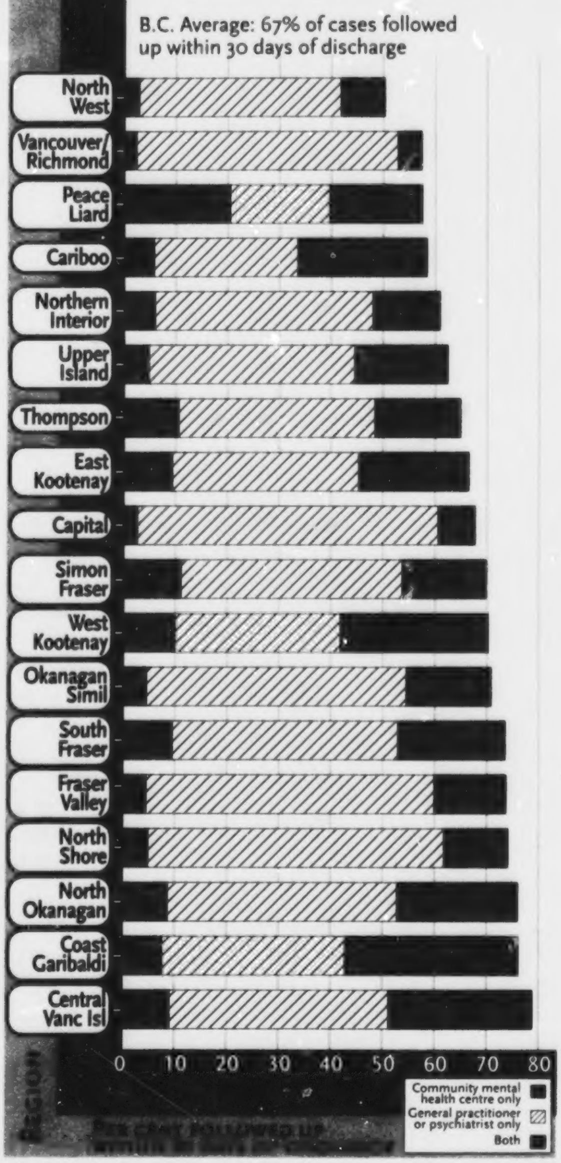
Of the 19,914 cases admitted to acute care hospitals for psychiatric reasons in 1998/99, only two-thirds (67 per cent) had contact with a community mental health centre or a private physician within 30 days of hospital discharge. Private physicians were the main point of contact – 45 per cent of cases were seen by a general practitioner or psychiatrist, and 15 per cent were seen by both a private physician and a community mental health centre. In one-third of the cases, individuals were not seen by either a mental health centre or a fee-for-service physician (Figure 76).

A comprehensive and well-coordinated range of services is particularly important for mental health clients, because many mental illnesses are long-term and require specialized care and support. Low rates of follow-up can indicate a lack of community services to support those with mental illness, or that there are problems with coordination between hospitals and the community system. A recent report by the Mental Health Advocate made some specific suggestions for improving coordination and responsiveness of the mental health system (Mental Health Advocate, 2000).

Figure 76

Community Follow-up after Hospitalization

Cases Admitted to Hospitals for Psychiatric Reasons, B.C., 1998/99



Per cent of cases (age 15-64) admitted to an acute care hospital for psychiatric reasons who received at least one contact with a mental health centre or a fee-for-service psychiatrist or general practitioner within 30 days of discharge. Source: Hospital Morbidity Database, Medical Service Plan Claims Database, and Client/Patient Information Management (CPIM) LAN Database. Unpublished tables. Prepared by Information and Analysis Branch, B.C. Ministry of Health.

Primary Care

The above indicators illustrate some areas where problems and pressures are occurring in British Columbia's health care system. Emergency rooms are sometimes used for treating coughs and colds, some people are admitted to hospital for conditions that could have been prevented, while others remain in hospital because they are waiting for a long-term care bed or other form of care. Once discharged from hospital, patients are not always able to connect with the community services they need. At the same time, British Columbia's population is growing and aging. Although each generation of seniors will likely be healthier and suffer less disability than those that proceeded them, it seems certain that overall, the amount of chronic illness will increase. This increase in chronic illness, coupled with increased intensity of medical services, leads to the need to re-think how primary care is organized and delivered in this province.

Primary care, sometimes called primary health care, takes place at the first point of contact with the health system – often in doctors' offices, health clinics, or community health centres. It is called primary because it is meant to be the first step in a continuum of health services.

For several years, debates about primary care reform have been taking place across Canada and around the world. Most experts now agree that a primary care system should include the following features:

- Group medical practice, where physicians and other health professionals work together as a team.
- Contracts that establish service standards such as regular office hours, extended office hours, and 24-hour availability of medical care through sharing of on-call duties.
- A registration process, such that each patient is registered with one group practice.
- Access to a wide range of health services, including prevention, education and counselling, screening, emergency care, management of acute and chronic illness, and continuing care services.
- Information systems that help to better organize and manage patient information and that permit performance measurement and accountability.
- Funding that is based on the number and medical needs of a region's population.
- Payments to group practices based on their population of patients, rather than the volume of services they provide.
- Requirements or incentives that encourage quality care, such as bonuses for achieving high immunization rates, setting of health goals, and audit processes.

Physicians play a central role in primary care. In British Columbia, the provincial government pays most physicians on a fee-for-service basis. This means that most physicians are independent businesses; they bill the government for the volume of services they have provided, and the provincial government acts as the re-imbursement agency. Fee-for-service arrangements are not necessarily the best way to encourage prevention efforts, and they are the most costly method of paying medical service providers (World Health Organization, 2000). While the majority of primary care physicians are currently paid on a fee-for-service basis, fewer than half (49 per cent) of doctors paid this way indicate that fee-for-service payment is their preferred mode of remuneration (Sullivan & Buske, 1998).

To explore new ways of providing primary care in British Columbia, the B.C. Ministry of Health was awarded $9.6 million from Health Canada's Health Transition Fund in 1998. Seven Primary Care Demonstration Projects were launched in the autumn of 1999 and will be evaluated over a three-year period ending March 2002. The Projects are testing various models of primary care which aim to:

- optimize the accessibility of high quality primary care, including appropriate referral to other services;
- promote, enhance, and reward the coordination of care and care management functions of primary care practitioners;
- encourage and enhance interdisciplinary/multi-disciplinary, team-based, patient-centred care;
- optimize health care professional job satisfaction; and
- enhance the provision of quality care through support of clinical information management systems.

Each pilot project will be assessed in terms of its impact on accessibility, quality, patient health outcomes, and cost-effectiveness of care. The evaluation will help determine successful components that can be considered for broader application in the future.

What Targets Are Achievable?

If the health system were perfectly efficient, there would be no preventable or unnecessary admissions to hospital, and all patients would receive timely care in the most appropriate and cost-effective place. What level of "preventable admissions", cases that "may not require hospitalization", and "alternate level of care days" are achievable? The lowest regional rates can provide some guidance, but local discussion is needed to determine whether, how much, and how hospitalization rates can be reduced.

There are no specific targets for the development of protocols and clinical practice guidelines. However, the Ministry of Health and the medical community are making continued efforts to develop and communicate evidence-based guidelines and tools. There are currently 28 guidelines and protocols in force, 11 guidelines are under development, and 13 are undergoing their periodic review.

British Columbia's Antimicrobial Resistance Steering Committee has an objective to reduce antibiotic prescriptions by 25 per cent, by focusing on common infections such as community-acquired pneumonia in adults and otitis media in children. An Action Plan to achieve this is currently being developed (see Emerging Infectious Diseases, page 131).

Guidelines produced by the Canadian Medical Association and Health Canada suggest that four out of every five women with breast cancer may be treated with breast-conserving surgery rather than mastectomy. However, this does not imply a target of 80 per cent. It is difficult to say that breast-conserving surgery rates are too low or that inappropriate mastectomies are being carried out, because the choice is one that each woman must make, according to her own situation, preferences, and priorities. However, a wide variation in rates should prompt a review of practice patterns.

Medical researchers generally agree that cesarean deliveries are required for the health of the baby or mother in 10 to 15 per cent of births (World Health Organization, 1995).

Most people who are hospitalized for psychiatric reasons require follow-up services once they are discharged from hospital. Provincial or regional targets for follow-up rates could be set. In 1998/99, the proportion of cases receiving at least one out-patient contact within 30 days of hospital discharge ranged from 50 per cent (North West) to 79 per cent (Central Vancouver Island), with a provincial average of 67 per cent.

What Actions Can We Take?

Individuals and families can:

- Learn about how to treat common diseases and injuries.
- Prepare for medical appointments by making a list of symptoms and questions, and play an active role in medical visits.
- Find out how your local hospitals compare with the provincial average for cesarean deliveries, breast-conserving surgery, and other surgical procedure rates.

The health system can:

- Reorganize primary care according to the goals of the Primary Care Demonstration Projects. Explore and implement a variety of organizational models and payment mechanisms, while at the same time strengthening the linkages between primary care and local health authorities.
- Expand public information on the appropriate treatment of common diseases. This could be done through the use of tools such as self-care handbooks, internet-based information, and the provision of telephone advice.
- Continue to work together to develop clinical care protocols, for physical and mental health problems.
- Protect people from antibiotic drug resistance by following antibiotic prescribing guidelines and by advising parents about how to care for and comfort their sick children, when antibiotics are not appropriate.
- Improve coordination between hospitals and community-based services, so that people who are hospitalized for psychiatric reasons are able to receive the follow-up services they need within a reasonable time frame.

Goal

- An effective and efficient health service system that provides equitable access to appropriate services.

Ultimately, the success of our health system is reflected in the health of British Columbians – their health status and the extent to which we are improving people's health, reducing sickness, and extending life expectancy and quality of life. Health services contribute, directly or indirectly, to many of the indicators presented throughout this report. Sometimes, the connection to health services is quite clear – the health system plays a major role in reducing heart disease, cancer, and communicable diseases, for example. For some measures, the role of the health system is one of advocacy, coalition-building, or public education.

Ideally, those who provide and manage the health system should be able to demonstrate that services provided have improved health beyond that which would have been achieved by doing something else with the same resources, or by doing nothing at all. In reality, demonstrating that specific health services have improved health is not an easy task.

At the service delivery level, some health agencies collect data that documents the health outcomes of the services they provide. For example, an agency may be able to show that their services have resulted in improved quality of life scores, reduced problem severity, or improved mental state. Survival rates among patients treated for cancer, heart attacks, trauma, or organ transplants are other outcome measures than can be calculated. Often, it is not possible or practical to obtain the required data or to consolidate this type of evaluative information into a provincial summary.

Included here are two indicators that illustrate the outcomes of health services – one that measures positive changes in health behaviours of prenatal program clients, and one that measures a negative outcome at the population level – deaths from medically-treatable diseases.

What Do the Data Show?

- Pregnancy outreach programs are able to help many women reduce their use of tobacco, alcohol, and other drugs – factors that have a direct impact on the birthweight and health of their babies.
- A number of medically-treatable deaths occur each year. In 1998, 113 people died from diseases that could potentially have been avoided through appropriate medical attention.

Improved Health Behaviours

Pregnancy Outreach Programs are one example of a program that collects ongoing, province-wide information about improvements in participants' health.

Figure 77 shows that program clients improve their choices in the areas of smoking, drinking alcohol, and drug use. This level of success has been repeated every year since the first Pregnancy Outreach Programs were established ten years ago.

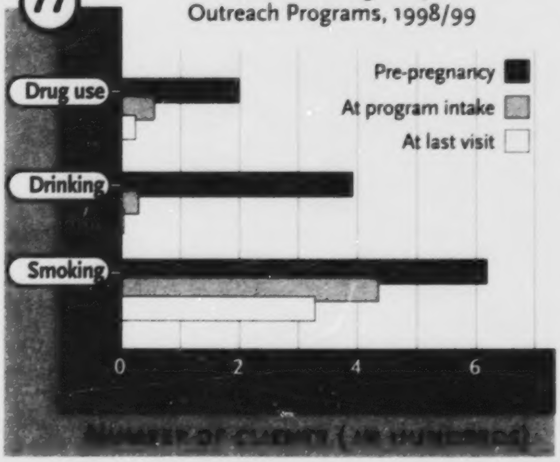


Figure 77 Improved Health Behaviours
Clients of Pregnancy Outreach Programs, 1998/99

Source: Pregnancy Outreach Program, 1998/99 Status Report. B.C. Ministry for Children and Families.

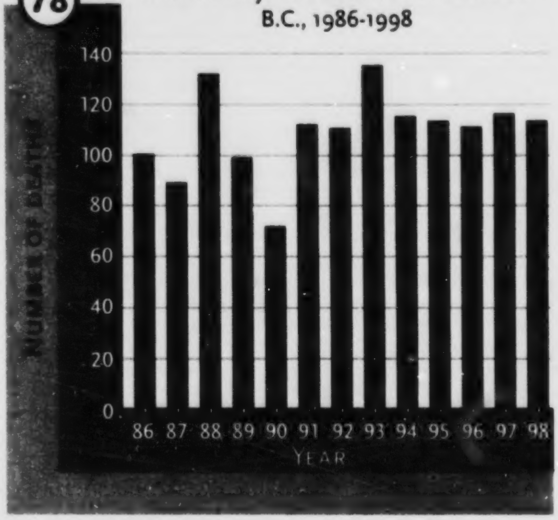
In 1998/99, nearly every client who had previously smoked was able to either abstain from smoking or to decrease the number of cigarettes smoked after their first contact with the Program. Among those women who smoked, the average amount was cut from 15 to 5 cigarettes per day. This is important, because even a small decrease in the amount smoked can affect the birthweight of a baby. The per cent of pregnant women who consumed the recommended servings of food also showed steady increases between starting the program and the last visit.

Other outcome measures among clients include breastfeeding (more than 80 per cent at the time of hospital discharge), pre-term births (which ranged from 5.5 to 8.5 per cent over the past five years), and low birthweight (4.6 to 6.9 per cent). Although low birthweight and pre-term birth rates are somewhat higher than rates for the province overall, these are still good results, as Pregnancy Outreach clients are typically young, single, low-income women – groups that are at greater risk of low birthweight and other poor pregnancy outcomes.

Figure 78

Deaths Due to Medically-Treatable Diseases

B.C., 1986-1998



Deaths due to conditions that could potentially have been avoided through appropriate medical intervention.

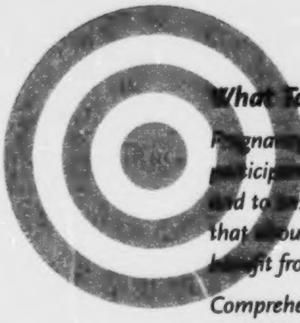
Source: B.C. Vital Statistics Agency, Ministry of Health. Vital Statistics Annual Reports.

Deaths Due to Medically-Treatable Diseases

Of the 27,790 deaths that occurred in 1998, 113 were due to diseases, in specific age groups, that could potentially have been avoided through appropriate medical attention. The number of deaths due to medically-treatable diseases has remained relatively small each year (Figure 78).

Three disease categories account for 70 per cent of medically-treatable deaths: cervical cancer, bacterial infections, and pneumonia. The remaining deaths are due to hypertensive disease, chronic rheumatic heart disease, appendicitis, tuberculosis, and asthma.

Vancouver – the Downtown Eastside in particular – has the highest rate of deaths due to medically-treatable diseases.



What Targets Are Achievable?

Pregnancy Outreach Programs have consistently shown good results in improving participants' health behaviours. The target now is to increase the number of program spaces and to ensure that spaces are available in areas where they are most needed. It is estimated that about 10 per cent of babies – about 4,500 each year – are born to mothers who would benefit from prenatal outreach services, for one reason for another.

Comprehensive pregnancy outreach programs are currently operating in 36 communities funded by the Ministry for Children and Families and Health Canada's Prenatal Nutrition Program. In addition, there are prenatal outreach components in three Ministry for Children and Families Building Blocks sites and seven Health Canada Community Action Program for Children initiatives. These programs are reaching nearly 3,000 women at risk for delivering low birthweight babies.

Because all British Columbians have access to medical and hospital care, we would expect the number of deaths due to medically-treatable diseases to remain very low, approaching zero.

What Actions Can We Take?

The health system can:

- Continue to develop ways to track and report on the results of health services provided.

Aboriginal Health

Goal 5: Improved health for Aboriginal peoples.

Aboriginal people, as a group, have poorer health status than the non-Aboriginal population. Goal 5 highlights the need for action to reduce this well-known and long-standing inequity.

Specific objectives and indicators have not yet been established for Goal 5. When the provincial health goals were being developed, it was recognized that more work and discussion would be needed, and that finalizing specific objectives must include the extensive involvement of Aboriginal people.

The Provincial Health Officer is currently developing a report on Aboriginal health, which will available in the year 2001. This upcoming report will provide a more comprehensive update on progress toward Goal 5, as well as information that will support development of specific objectives, indicators, and targets for Aboriginal health.

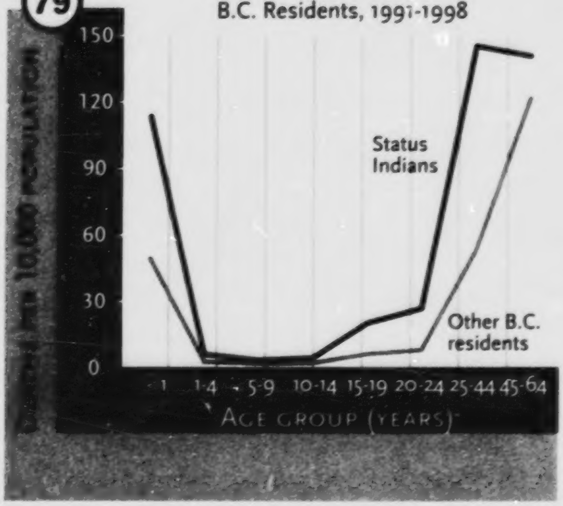
The following section presents a few of the key indicators that are being used to measure the health status of Aboriginal people and the factors that influence their health, including the need for greater self-determination in Aboriginal communities.

Numerous studies and reports have documented the fact that the health status of Aboriginal people falls below that of the general population. This section presents recent data on three traditional health status measures: infant mortality, potential years of life lost, and life expectancy.

Standard health indicators and statistics about death and disease are not always meaningful and useful to Aboriginal communities. A handbook produced for health authorities gives some examples of alternative measures, such as how many grannies a child has around her when growing up, how many people in the community still speak their language, or how many settle for much less than the realization of their full potential in life (Aboriginal Health Association of B.C., 1999). In the Provincial Health Officer's upcoming report on Aboriginal health, we will aim to expand the indicators presented below and to include measures that are more relevant and meaningful to Aboriginal communities.

Figure 79 Mortality Rates by Age Group

Status Indians And Other B.C. Residents, 1991-1998



Deaths (all causes) per 10,000 population in each age group.
Source: B.C. Vital Statistics Agency (2000, January).
Analysis of Health Statistics for Status Indians in British Columbia 1991-1998, p. 42.

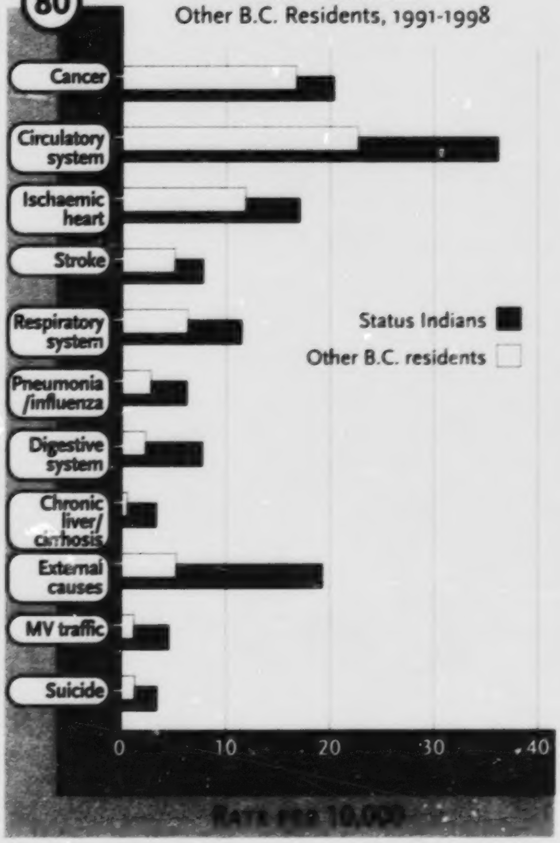
What Do the Data Show?

- Aboriginal people continue to have a level of health that is far below that of the general population.
- The health status of Aboriginal people is improving, based on traditional health status measures. Reductions in infant mortality are particularly noteworthy.

On average, Status Indian death rates are almost twice the provincial average. For Sudden Infant Death Syndrome (SIDS), motor vehicle accidents and other injuries, and chronic liver disease, death rates among Status Indians are three to eight times higher than the general population. However, Status Indians die at younger ages (Figure 79) and at higher rates – for all major causes of death (Figure 80).

Figure 80 Mortality Rates by Cause

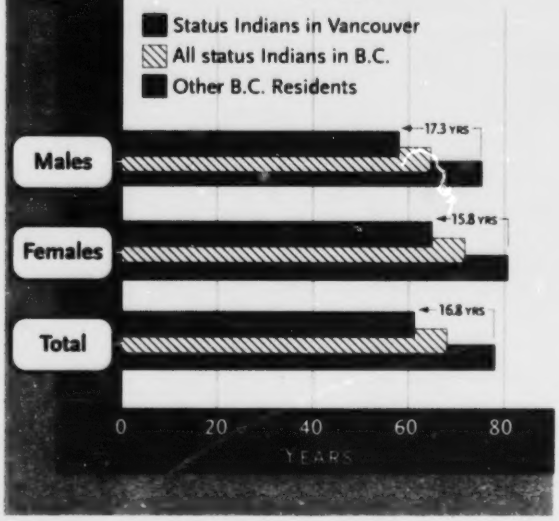
Status Indian and Other B.C. Residents, 1991-1998



Age standardized mortality rates: Deaths per 10,000 standard population.
Source: B.C. Vital Statistics Agency (2000, January).
Analysis of Health Statistics for Status Indians in British Columbia 1991-1998, p. 71.

As a result of these higher death rates, Status Indians in British Columbia can expect to live ten years less than other B.C. residents. The gap between Status Indians and the general population is greater for males (10.6 years) than for females (8.9 years). Status Indians living in Vancouver have an even shorter life span – 61.1 years for males and females combined, which is 16.8 years less than the life span of other B.C. residents (Figure 81).

Figure 81 Life Expectancy at Birth
Status Indian and Other B.C. Residents, 1991-1997



Vancouver: Vancouver/Richmond Health Region.
Other B.C. residents: B.C. population excluding Status Indians.
Source: B.C. Vital Statistics Agency, July 1999. Urban Status Indian Health Indicators. Birth-related and Mortality Analysis, 1987-1997, p. 75.

Terminology

A number of terms are used in referring to the indigenous population of Canada. It is important to understand the origin and definitions of these terms, because each group of Aboriginal people has a distinct history, culture, and legal entitlements. In addition, much of the current data about Aboriginal people refer only to specific Aboriginal groups.

The term Aboriginal, as recognized in the *1982 Constitution of Canada*, refers to First Nations, Metis, and Inuit peoples as a group. First Nations has replaced the term Indian as the terminology preferred by an Aboriginal person who identifies as being a descendant of the first inhabitants of Canada.

First Nations people are often considered members of a First Nation band or tribe. First Nations is not a legal definition and refers to both Status Indians and non-Status Indians. Status Indians (sometimes referred to as registered Indians) are entitled to the provisions of the *Indian Act*. Status Indians can be either Treaty Indians or Non-Treaty Indians. Treaty Indians belong to a First Nation that has signed a treaty with the Canadian government. In British Columbia, most First Nations did not sign treaties. However, a process is under way in which First Nations are currently negotiating modern-day treaties.

The Inuit are a distinct population of Aboriginal people, most of whom live in northern Canada. The Inuit are registered under a revision to the *Indian Act* in 1924. The Metis are a group of mixed First Nations or Inuit and European ancestry. Metis history dates back to the 17th century. Most Metis people live in the three prairie provinces. Unlike Status Indians and Inuit, the Metis are not entitled to the provisions of the *Indian Act*.

British Columbia is home to 140,000 Aboriginal people: 113,000 First Nations, 27,000 Metis, and 800 Inuit people (Statistics Canada, January 1998).

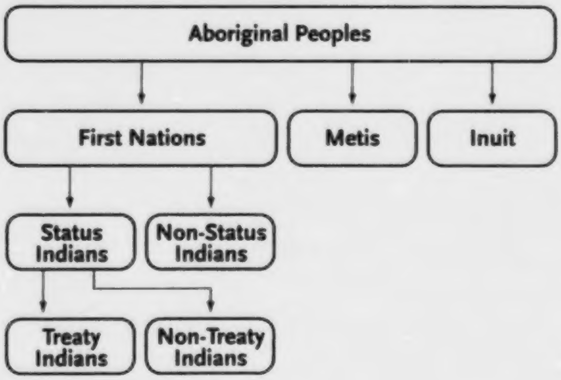
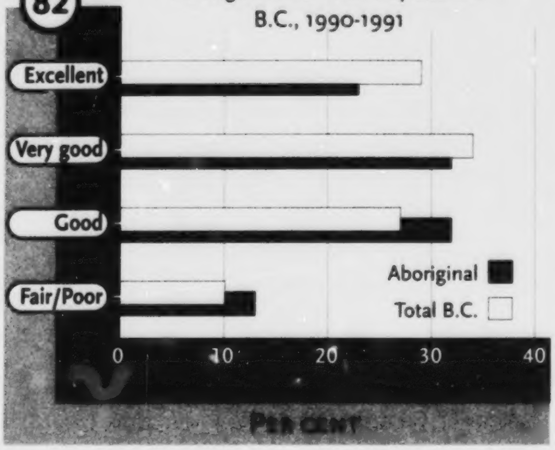


Figure 82

Self-Rated Health

Aboriginal and Total Population, B.C., 1990-1991

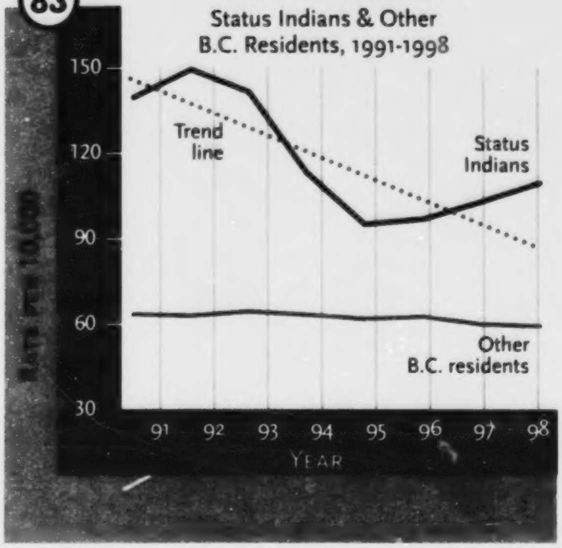


Aboriginal population: B.C. population age 15 and over reporting Aboriginal identity. Statistics Canada Post Censal Survey 1991. Language, Tradition, Health, Lifestyle and Social Issues. Cat. No. 89-533. Total B.C. population: Population age 15 and over. Canada's Health Promotion Survey 1990.

Figure 83

Mortality Rate for All Causes of Death

Status Indians & Other B.C. Residents, 1991-1998



Age-standardized mortality rates: Deaths per 10,000 standard population. Source: B.C. Vital Statistics Agency (2000, January). Analysis of Health Statistics for Status Indians in British Columbia 1991-1998, Page 40 and Appendix 2.

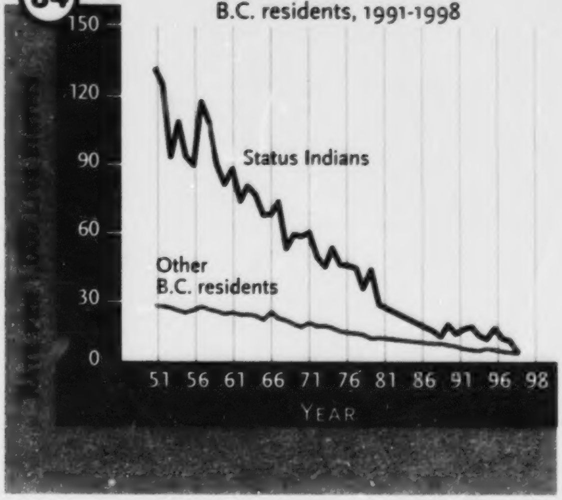
Compared to their non-Aboriginal counterparts, Aboriginal people are less likely to rate their own health as "excellent" or "very good" (Figure 82), and national surveys have found that chronic conditions such as heart disease, diabetes, and arthritis are more common among First Nations. Other immediate threats to Aboriginal health include smoking, teen suicide, teen pregnancy, mental health problems, HIV/AIDS, Fetal Alcohol Syndrome, and SIDS (Aboriginal Health Association of B.C., 1999; Health Canada, First Nations and Inuit Health Program, 1999).

Although rates of death and disease remain unacceptably high, overall trends are improving, and the gap is narrowing between Status Indians and the rest of the population (Figure 83). In the 1950s, one in every ten Status Indian babies died during infancy – a rate that was five times the provincial average. Since then, Status Indian infant mortality has dropped dramatically, and this represents a major achievement (Figure 84).

Figure 84

Infant Mortality Rate

Status Indians & Other B.C. residents, 1991-1998

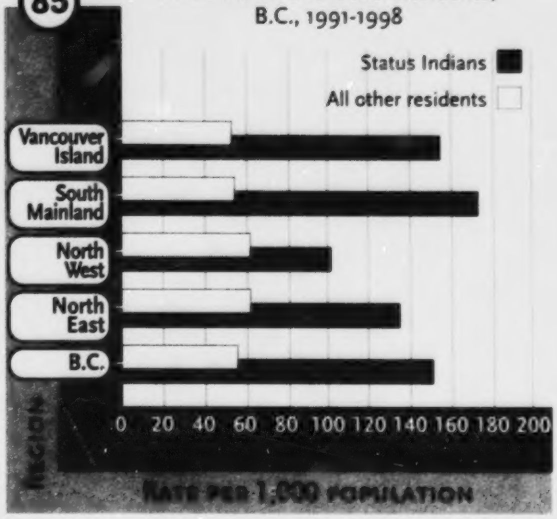


Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Figure 85

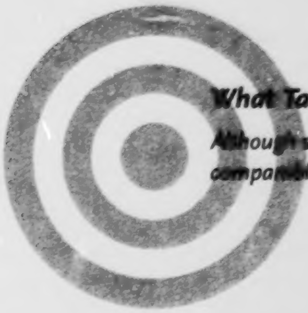
Potential Years of Life Lost

Status Indian and Other Residents, B.C., 1991-1998



The number of years of life lost for deaths that occurred before age 75, expressed as an age-standardized rate per 1,000 population in the region. Regions are the four administrative areas used by Medical Services Branch, Health Canada. Source: B.C. Vital Statistics Agency (2000. January). Analysis of Health Statistics for Status Indians in British Columbia 1991-1998, Table 13.

Aboriginal communities are not identical in their health status. Annual statistics are now being produced that provide birth and death-related statistics and trends for four geographic areas within the province: the North West, the North East, Vancouver Island, and South Mainland. For overall mortality and for premature deaths, Status Indians living in the North West have the lowest rate and the smallest gap between Status Indian and the rest of the population, while Status Indians in the South Mainland have the highest rates (Figure 85). Status Indians in the Vancouver Island area have the highest infant mortality rate. However, all four areas have shown a decreasing trend in infant mortality over the last few years. (B.C. Vital Statistics Agency, 2000).



What Targets Are Achievable?

Although specific targets have yet to be developed, we should be aiming to achieve comparable health status between Aboriginal people and the general population.

What Actions Can We Take?

Governments and communities can:

- Continue current efforts to develop and implement a Provincial Aboriginal Health Services Strategy.
- Encourage greater Aboriginal participation in health authority governance and in the design and delivery of culturally-appropriate health services.
- Share information about programs and services that are innovative and effective in improving health outcomes for Aboriginal people.
- Implement programs to tackle major threats to Aboriginal health, which include smoking, Fetal Alcohol Syndrome, SIDS, teen suicide, teen pregnancy, mental health problems, and HIV/AIDS.

For Aboriginal people, the factors associated with health are the same as those in other population groups – income, employment, education, and other factors that affect one's ability to participate in family and community life. Powerlessness experienced as a result of colonialism, racism, and loss of cultural identity are other important influences that have affected the health of Aboriginal people (Royal Commission on Aboriginal Peoples, 1996).

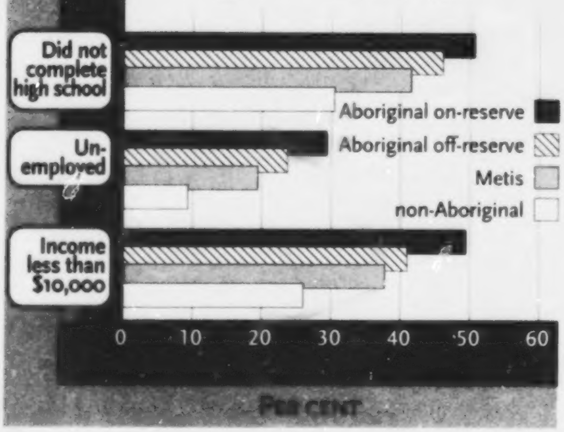
What Do the Data Show?

- Compared to the non-Aboriginal population, Aboriginal people are more likely to be living in poverty, unemployed, and without a high school diploma, especially if they live on-reserve.
- Aboriginal communities are beginning to have more say in the programs and services they receive.

In 1996, unemployment on reserves was more than triple the non-Aboriginal rate. More than half of the on-reserve population had not completed high school, and 49 per cent had incomes below $10,000 (Figure 86). Aboriginal communities are also more likely to experience problems such as substandard housing, homelessness, family violence, poor water quality, and lack of recreation facilities (Health Canada, First Nations and Inuit Health Programs, 1999; Aboriginal Health Association of British Columbia, 1999).

Figure 86 Three Indicators of Living and Working Conditions

Aboriginal and non-Aboriginal Population Age 15 and Over, B.C., 1996



Source: Statistics Canada. 1996 Census Dimension Series - Profile of Aboriginal Population in Canada. Data provided by BC STATS, B.C. Ministry of Finance and Corporate Relations.

Many Aboriginal communities have begun to make improvements in these conditions that ultimately affect health. This is being achieved through community self-governance, including control over local health and social services.

About 70 per cent of the province's registered Aboriginal population are currently engaged in treaty negotiations, which deal with issues such as land ownership, self-government, wildlife and environmental management, sharing resources, financial benefits, and taxation. About two-thirds of bands have taken responsibility for community health services provided on-reserve, or are in the planning stages to do so. About 28 per cent of Aboriginal students on-reserve are enrolled in band schools, and 61 per cent of First Nations communities have assumed responsibility for child protection services or are in the planning or pre-planning stages (Table 10). These figures show that the majority of on-reserve communities are on the road to self-government.

Table 10 Measures of Community Control, First Nations Communities in B.C.

Measure	Per cent
Participation in treaty negotiations [1]	70
Control over health services [2]	65
Students enrolled in Band schools [3]	28
Control over child protection services [4]	61

[1] Proportion of registered Aboriginal population involved in the B.C. treaty process (65%) or in Nisga'a negotiations (5%), as of January 31, 2000. B.C. Treaty Commission, http://www.bctreaty.net. [2] Proportion of bands that have completed transfer agreements (47%) or that are in the pre-transfer stage (18%). Health Canada, Medical Services Branch, April 2000. [3] Proportion of Status Indian students on-reserve enrolled in band schools, 1999/2000 school year. An Overview of Aboriginal Education Results for: Province of B.C. B.C. Ministry of Education, May 2000. [4] Proportion of First Nations on-reserve whose communities have assumed responsibility for child protection services or are in the planning or pre-planning stages. B.C. Ministry for Children and Families, March 2000.

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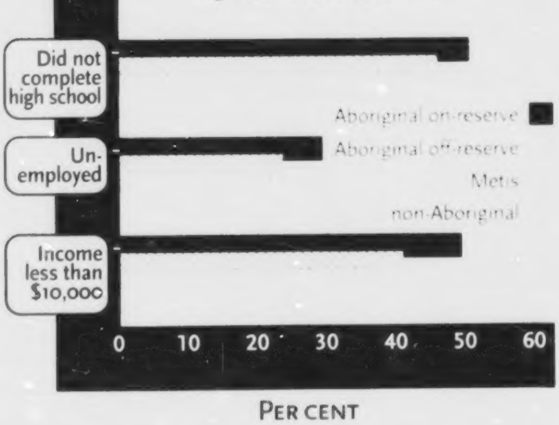


Source: Statistics Canada, 1996 Census Dimension Series - Profile of Aboriginal Population in Canada. Data provided by BC STATS, B.C. Ministry of Finance and Corporate Relations

Many Aboriginal communities have begun to make improvements in these conditions that ultimately affect health. This is being achieved through community self-governance, including control over local health and social services.

About 70 per cent of the province's registered Aboriginal population are currently engaged in treaty negotiations, which deal with issues such as land ownership, self-government, wildlife and environmental management, sharing resources, financial benefits, and taxation. About two-thirds of bands have taken responsibility for community health services provided on-reserve, or are in the planning stages to do so. About 28 per cent of Aboriginal students on-reserve are enrolled in band schools, and 61 per cent of First Nations communities have assumed responsibility for child protection services or are in the planning or pre-planning stages (Table 10). These figures show that the majority of on-reserve communities are on the road to self-government.

Table 10 Measures of Community Control, First Nations Communities in B.C.

Measure	Per cent
Participation in treaty negotiations [1]	70
Control over health services [2]	65
Students enrolled in Band schools [3]	28
Control over child protection services [4]	61

[illegible]

What Targets Are Achievable?

With regard to low income and unemployment rates for Aboriginal communities, no specific targets have been set for British Columbia. The Ministry of Education's Aboriginal Education Branch has a number of goals and priorities for increasing the academic success of Aboriginal students and for involving Aboriginal communities in decisions about schools and the programs they provide (http://www.bced.gov.bc.ca/abed).

The decision to establish a band school is made locally. For a variety of reasons, Aboriginal communities may not choose this path, and there is no specific target for the proportion of children who attend band versus public schools.

The long-term goal of Medical Services Branch is to withdraw completely from direct delivery of services on-reserve, reserving only funding, accountability, and some supervisory functions for itself. With child protection services, too, the principle is that First Nations should control child protection services. The long-term goal is complete delegation, although some bands may be considered too small to manage and deliver their own services.

A 1998 study found that youth suicide rates were lower in communities that have achieved self-governance, are engaged in land claims negotiations, have cultural facilities, and have control over local health and social services (Chandler & Lalonde, 1998). As part of the work to develop the Provincial Health Officer's report on Aboriginal health, we aim to update the data presented by Chandler and Lalonde and to relate the community control measures to other health outcomes.

What Actions Can We Take?

Individuals and families can:

- Actively oppose racism.

Governments and communities can:

- Promote efforts to reduce poverty and improve living conditions in Aboriginal communities.
- Find out what works in helping Aboriginal students learn and stay in school, and ensure that Aboriginal students are supported.
- Support efforts by Aboriginal people to achieve self-governance and a collective sense of control over their futures.
- Focus on the strengths and values of Aboriginal families, communities, culture, and spiritual beliefs.
- Support programs and services that focus on the development of self-esteem, coping skills, and healthy behaviours.

Disease and Injury Prevention

Goal 6. Reduction of preventable illness, injuries, disabilities, and premature death.

Many of the health problems that British Columbians experience can be prevented, at least to some extent. Goal 6 highlights some of the major diseases and conditions that affect us and for which effective prevention or early intervention strategies are available.

Included under Goal 6 are:

- Non-communicable diseases, a wide range of illnesses and conditions such as heart disease, cancer, lung disease, mental disorders, and birth defects.
- Communicable diseases, many of which are preventable through the use of vaccines or other protective measures.
- Injuries, which includes injuries due to motor vehicle collisions, falls, drowning, and other unintentional causes, as well as suicide and other forms of violence.

Objectives

- Reduce cardiovascular disease.
- Reduce breast cancer, cervical cancer, lung cancer, and melanoma skin cancer.
- Reduce respiratory disease.
- Reduce the incidence and impact of chronic disabling conditions.
- Reduce neural tube defects.
- Reduce the negative impact of mental illness.

The term non-communicable disease encompasses a wide range of diseases and health conditions. At this point, specific diseases have been included under Goal 6 only if an indicator and information systems are now available to systemically measure health status changes. Currently, Goal 6 contains objectives related to cardiovascular disease, cancer, respiratory disease, chronic disabling conditions, neural tube defects, and mental illness. Other non-communicable health problems could be added to Goal 6, as our knowledge advances and as measurement becomes possible.

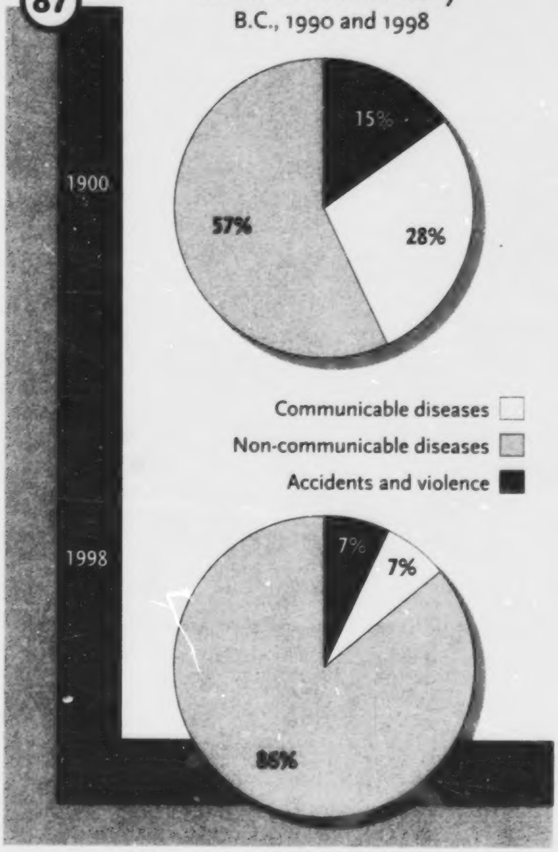
What Do the Data Show?

- More than 90 per cent of deaths are caused by non-communicable diseases such as heart disease, cancer, and lung disease.
- Mental illness is the leading cause of disease and disability, based on international statistics about Disability-Adjusted Life Years (DALYs).
- We have the knowledge to prevent – or reduce the impact of – many of the non-communicable diseases that affect the health of British Columbians. This can be done most efficiently by working together to address the root causes of disease and to promote healthy practices such as non-smoking, healthy eating, and regular physical activity.

Figure 87

Causes of Death in the 20th Century

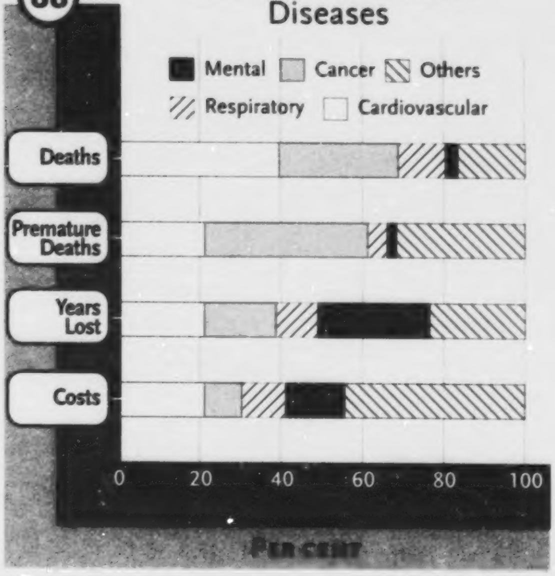
B.C., 1990 and 1998



Communicable diseases: Infectious/endemic diseases including pneumonia and influenza. Non-communicable diseases: All other natural causes of death. Source: B.C. Vital Statistics Agency, Ministry of Health. Data for 1900: The Nineteen Eighties: A Statistical Resource for a Decade of Vital Events in British Columbia. Data for 1998: Vital Statistics Annual Report 1998.

Figure 88

Burden of Non-Communicable Diseases



Deaths and premature deaths: Deaths (all ages) and Potential Years of Life Lost (PYLL) for deaths under age 75. B.C. residents, 1998. B.C. Vital Statistics Agency, Ministry of Health. Years of healthy life lost: Disability-Adjusted Life Years (DALYs), a measure of the burden of disease that considers years of life lost to premature death and years lived with a disability. Figures are estimates for high-income countries, 1998. World Health Organization. The World Health Report 1999, Annex Table 3. Costs: Estimated direct costs based on expenditures for physicians, hospitals, drugs, and research, Canada, 1993. Economic Burden of Illness in Canada, 1993. Health Canada Catalogue No. H21-136/1993E. Other diseases: Other non-communicable diseases and conditions (ICD-9 140-799), excluding injuries. Health care costs exclude expenditures for pregnancy and well-patient care.

Overall Trends

Non-communicable diseases are becoming more common in British Columbia and around the world. At the beginning of the 20th century, tuberculosis, typhoid, diphtheria, and other infectious diseases were major killers. Today, more than 90 per cent of deaths are caused by non-communicable diseases such as heart disease, cancer, and lung disease (Figure 87).

Various measures can be used to assess the burden of non-communicable diseases. Depending on the measure used and how diseases are grouped, the relative importance of each disease will differ (Figure 88). Cardiovascular disease (heart disease and stroke) is the leading cause of death. Of the non-communicable diseases, cancer is the leading cause of Potential Years of Life Lost, because many cancer deaths occur before age 75.

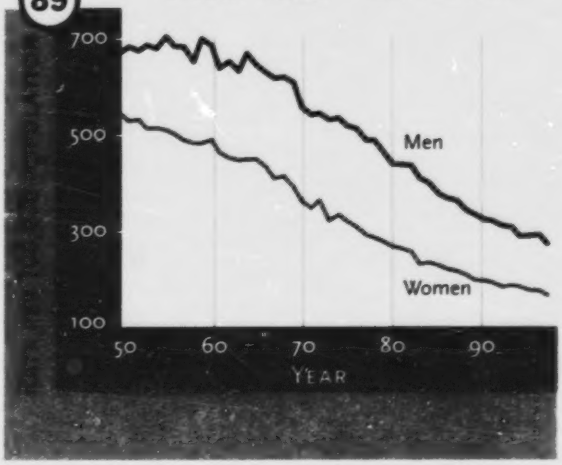
When the impact of disability is factored in, mental illness presents the greatest burden, based on World Health Organization calculations for Disability-Adjusted Life Years (DALYs) in high-income countries (World Health Organization, 1999). In Figure 88, mental illness includes disorders such as depression, alcohol dependence, and other psychiatric problems. If suicide and violence – which are often linked to mental illness – were added in, the impact of mental illness would be even higher. In terms of health care costs, the causes are diverse. Arthritis, diabetes, vision or hearing problems, allergies, digestive diseases, and a wide range of other conditions contribute to the use of health care services.

While non-communicable diseases might seem to be quite a mixed group, in fact there are some remarkable similarities. There is often a genetic component. For example, individuals may be born with a family history or genetic markers that increase their risk of developing heart disease, breast cancer, or schizophrenia. But the actual development of non-communicable diseases is usually influenced by one or more risk factors such as smoking, high-fat diet, physical inactivity, alcohol abuse, or stress.

Income, social class, work environment, and social support are also linked to non-communicable diseases. People with low income, low occupational status, and high job strain tend to have higher rates of disease, even when differences in behavioural risk factors such as smoking are taken into account. Higher income, social position, and control over day-to-day life seem to provide a buffer that helps defend the body against disease. In summary, the root causes of many diseases and conditions that British Columbians experience are inter-related and often similar.

What does this mean in terms of prevention? Traditionally, activities have been organized around individual diseases (heart disease, diabetes, lung disease) or problems (tobacco, nutrition, aging, mental health). More recently, the need to work together has been recognized. By sharing information about specific diseases and what works to prevent them, agencies can be more effective in reducing the overall impact of non-communicable diseases. In British Columbia, the Ministry of Health has started discussions with key government and non-government stakeholders that deal with non-communicable disease prevention, with a view to identifying inter-relationships and opportunities for common approaches.

Figure 89 Cardiovascular Disease Death Rates B.C., 1950-1997



Age standardized mortality rate, all cardiovascular diseases.
Source: Disease Surveillance On-Line. Laboratory Centre for Disease Control, Health Canada. http://www.hc-sc.gc.ca/hpb/lcdc/webmap/index.html.

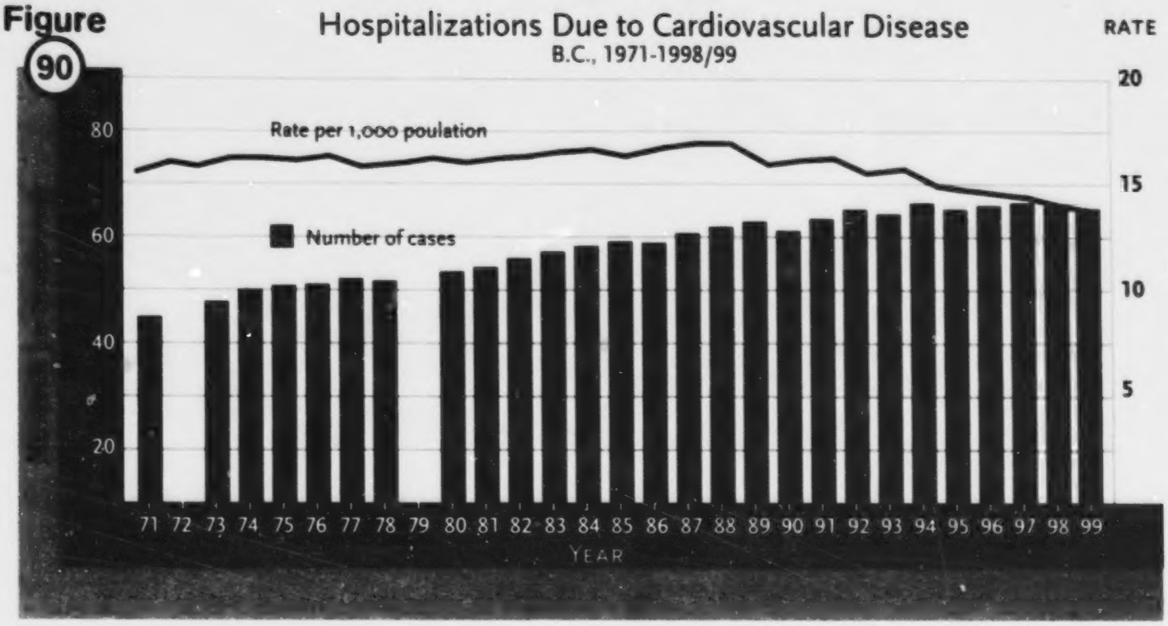
Trends in Specific Diseases

Cardiovascular disease death rates have declined steadily since the mid-1960s (Figure 89). Factors contributing to the decline include reductions in smoking and consumption of dietary fat, improved control of high blood pressure, and improved medical and surgical care. Compared to other provinces, British Columbia has the lowest death rate for ischemic heart disease (heart attack and other coronary artery disease) and for cardiovascular disease overall. However, our rate of stroke deaths is slightly above the Canadian average.

Figure 90

Hospitalizations Due to Cardiovascular Disease

B.C., 1971-1998/99



Source: PURRFECT 5.0 and Statistics of Hospital Cases Discharged. Information and Analysis Branch, B.C. Ministry of Health.

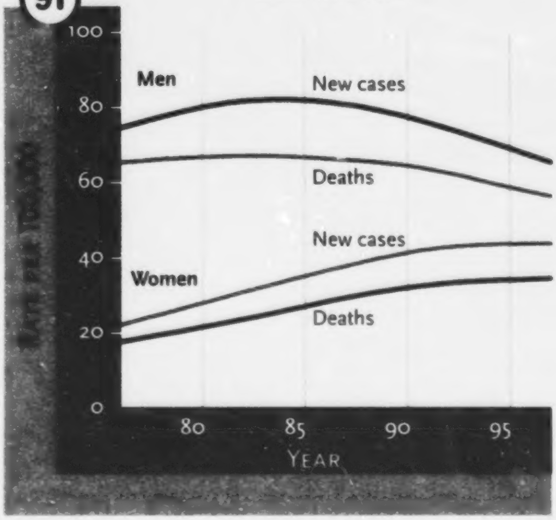
Although death rates and hospitalization rates have declined, cardiovascular disease remains a leading cause of death, disease, and disability among British Columbians. For many individuals, death marks the end point in what can be a long path of disability (Heart and Stroke Foundation, 1999). Furthermore, the actual number of people suffering from cardiovascular disease and requiring hospital care has continued to increase, as a result of British Columbia's growing and aging population (Figure 90).

Overall, the rate of new cancer cases (cancer incidence) has remained fairly steady, while cancer death rates have declined slightly. However, each type of cancer has its own characteristics and patterns. Lung cancer has been decreasing among men, reflecting the decline in smoking rates that began in the 1960s. Among women, lung cancer rates are continuing to increase, because women's smoking rates started to decline later and more slowly than men's (see Figure 39). The chances of recovering from lung cancer are quite low. Thus, death rates are not far below the incidence rate (Figure 91). Because it is so common, primarily due to smoking, and has a poor survival rate, lung cancer is by far the leading cause of preventable, premature cancer deaths (National Cancer Institute of Canada, 2000).

Figure 91

Lung Cancer Rates

B.C., 1977-1997

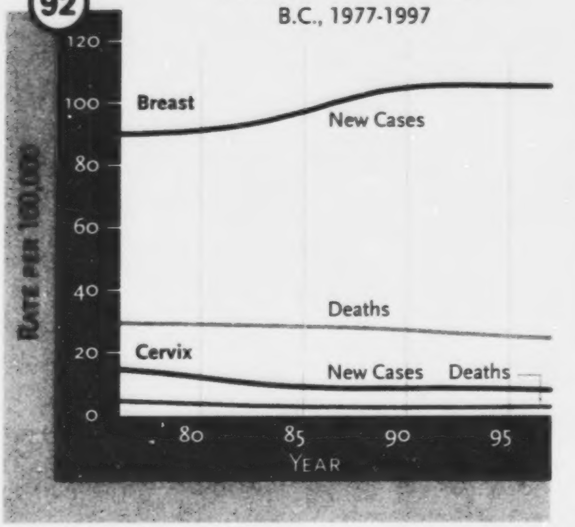


Rates per 100,000 (smoothed, age-standardized to the Canadian 1991 population). Source: B.C. Cancer Registry. Unpublished tables, December 1999.

Figure 92

Breast Cancer and Cervical Cancer

B.C., 1977-1997

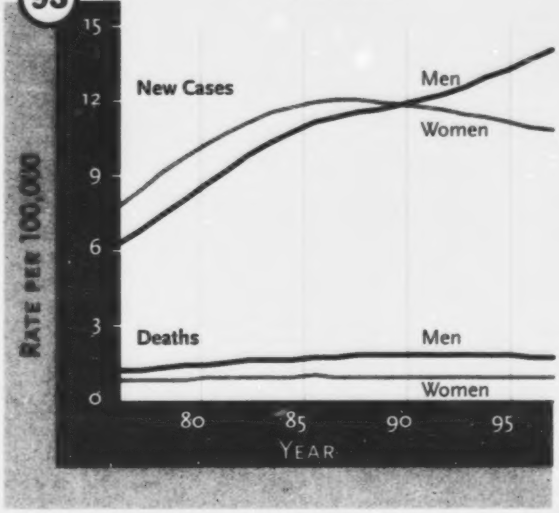


Rates per 100,000 (smoothed, age-standardized to the Canadian 1991 population).
Source: B.C. Cancer Registry. Unpublished tables, December 1999.

Figure 93

Melanoma Skin Cancer Rates

B.C., 1977-1997



Rates per 100,000 (smoothed, age-standardized to the Canadian 1991 population).
Source: B.C. Cancer Registry. Unpublished tables, December 1999.

Breast cancer incidence rose over the 1980s and early 1990s, in part due to the use of mammography as a screening test, but the rate of new cases has started to decrease over the past five years. The death rate from breast cancer has been showing a decline, which has been attributed to early detection and improved treatments. With the establishment of the Pap smear program, the rate of cervical cancer fell dramatically, but the decline has slowed in recent years (Figure 92). Although relatively rare, cancer of the cervix still occurs in British Columbia, and deaths from this disease could be reduced if more women had regular Pap tests.

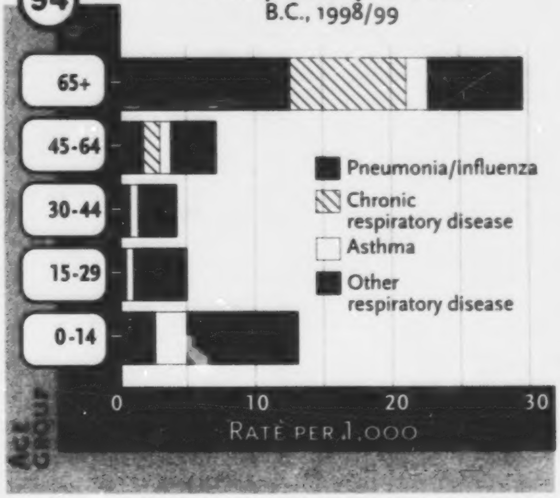
Over the past 20 years, the incidence of malignant melanoma, the most serious type of skin cancer, has more than doubled. Rates are still rising in men, but have levelled off in women (Figure 93). Exposure to the sun is the principal risk factor for this type of cancer.

Prostate cancer is the most frequently diagnosed cancer among men. There were huge increases in the rate of new cases in the early 1990s, as a result of detection using Prostate Specific Antigen (PSA) testing. Death rates have not shown much change, and there is no evidence that early detection improves survival for this type of cancer. Because there are no specific preventive actions to recommend at this time, the provincial health goals do not include a specific objective regarding reduction of prostate cancer.

Figure 94

Hospitalizations Due to Respiratory Disease

B.C., 1998/99



Source: Morbidity Database. PURRFECT 5.0. Information and Analysis Branch, B.C. Ministry of Health.

Respiratory diseases remain a significant health problem in British Columbia. Of the various respiratory diseases, pneumonia and influenza and chronic respiratory disease are the major causes of death, and death rates from these conditions have not changed much over the past 20 years. Asthma, although it causes fewer deaths, is a serious condition that causes people to limit their activities. Hospital data show that asthma and other respiratory diseases are most common among children and adults over age 65 (Figure 94).

How are we doing in achieving the provincial objective to "reduce the negative impact of mental illness"? This is an area that presents some measurement challenges, because it requires collecting information about how well people are managing their illness and whether they are achieving the best possible quality of life. Some indicators being considered for future development include:

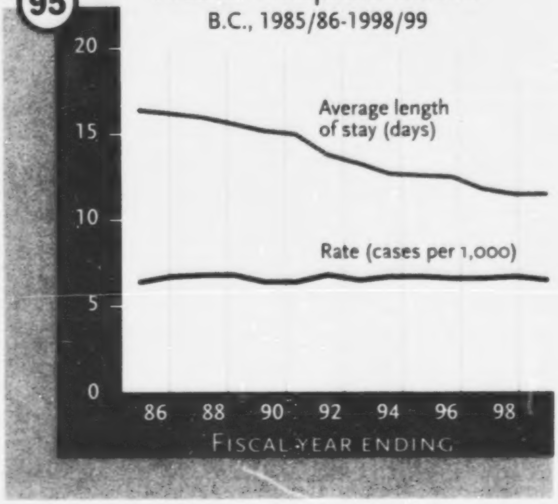
- Proportion of persons with mental illness who have stable housing, adequate income, and meaningful daytime activity, to indicate people's ability to achieve independent living and to improve their quality of life.
- Improvements in quality of life and ability to function, as defined by persons with mental illness themselves, as a measure of success in relieving symptoms and helping people to cope with their illness.
- Death rates from suicide and other avoidable causes among persons with mental illness, to indicate success in early identification and treatment of health problems.

Of data that are currently available, hospital usage provides an indication of how debilitating mental illness can be. Although hospital admission rates have been declining steadily for most other diseases and conditions, the rate at which people are hospitalized for mental illness has not changed appreciably in recent years, remaining at between six and seven cases per 1,000 population (Figure 95). The average number of days spent in hospital has declined (from 16.4 days to 11.5), however, reflecting a trend towards providing more care in the community, rather than in a hospital setting.

Figure 95

Mental Health Hospitalizations

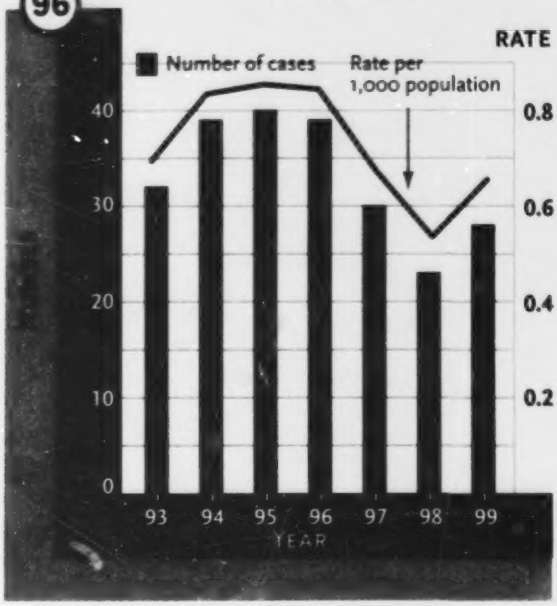
B.C., 1985/86-1998/99



Hospitalization rate (cases per 1,000 total population) and average length of stay in hospital for mental disorders (ICD9 290-319), acute and rehabilitation care. Source: Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Unpublished tables.

Figure 96

Neural Tube Defects
B.C., 1993-1999



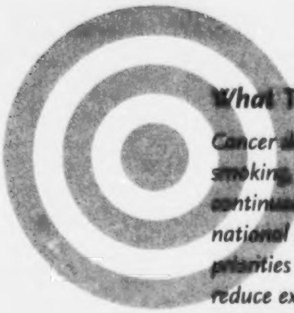
Number of neural tube defect cases reported to the Health Status Registry and rate per 1,000 total births (live births plus stillbirths). Source: Health Status Registry, B.C. Vital Statistics Agency. Unpublished tables.

As with mental illness, other chronic and disabling conditions can have profound effects on a person's quality of life. Activity limitation, disability-days, and chronic pain are some of the measures that can be used to track the occurrence and impact of these conditions. Available data are presented in the sections on General Health and Health Conditions (pages 10 - 16).

The rate of neural tube defects has been declining, based on cases reported to the Health Status Registry. In the 1980s, approximately one in every 1,000 births was affected with a neural tube defect, a serious birth defect affecting the brain and spinal column. Over the past seven years, the rate has remained below one per 1,000 (Figure 96). The number and rate fluctuate from year to year, in part due to the small number of babies born with these anomalies. Since 1993, the annual number of cases has ranged from a low of 23 (in 1998) to a high of 40 (in 1995).

A portion of the decline in neural tube defects is due to prenatal detection. With the advent of amniocentesis and ultrasound, many types of anomalies can be detected early in pregnancy, and the mother may choose to abort the fetus. Declining rates may also indicate success in informing the medical profession and the public about the benefits and timing of taking folic acid. The risk of neural tube defects can be greatly reduced iwomen consume enough folic acid before conception and during the early weeks of pregnancy.

Neural tube defects are just one of many types of birth defects that are inherited or caused during pregnancy. In British Columbia, information about the number and types of birth defects are reported to the Health Status Registry, a database maintained by the B.C. Vital Statistics Agency. Improvements have recently been made to the Health Status Registry to make reporting more complete and accurate. A report with updated statistics is expected to be available from the Health Status Registry toward the end of the year 2000.



What Targets Are Achievable?

Cancer death rates can be reduced (some estimates are 25 to 50 per cent) by efforts to reduce smoking, improve diets, screen for breast and cervical cancer, reduce sun exposure, and continued development and use of cancer treatments. A process is under way to create a national strategy for cancer control. This will include achieving consensus on goals and priorities that will reduce illness and deaths caused by cancer, encourage healthy behaviours, reduce exposure to cancer risk factors, and improve quality of life for those affected by cancer (Luciani and Berman, 2000).

Objectives and targets related to respiratory disease often focus on achievement of specific preventive actions, e.g., reducing smoking, reducing exposure to second-hand smoke and outdoor air pollution, and obtaining high coverage for influenza and pneumococcal immunization (see Influenza Immunization, page 86 and Vaccine-Preventable Diseases, page 125).

Up to 90 per cent of mental illnesses can be managed, if people have access to effective treatments (Andrews & Teeson, 1994). As part of British Columbia's mental health reform initiative, a major effort is being made to identify "best practices" and to monitor and report publicly on the performance of the mental health system. One of the performance categories is "outcomes" – improvements in the health and quality of life for persons with mental illness (B.C. Ministry of Health, Adult Mental Health Division, 2000). As performance indicators are identified and as baseline information becomes available, targets and benchmarks will be further considered.

Research suggests that at least 50 per cent of neural tube defects could be prevented, if women take sufficient amounts of folic acid around the time of conception and during the early weeks of pregnancy.

What Actions Can We Take?

Individuals and families can:

- Stay healthy — be smoke-free, be physically active, eat well, avoid drugs and excess alcohol, and control stress.
- Have regular preventive and screening exams, as recommended for your age, gender, and risk factors.
- When health problems occur, seek attention early, when problems are easier to treat.

The health system can:

- In allocating resources, use a "burden of illness" approach that considers the impact of illness and disability on people's daily lives. Such an approach would see more efforts directed to problems such as mental illness – the leading cause of disability life-years lost.
- Encourage health agencies to work together to address smoking, physical inactivity, poor diet, overweight, stress, and other common risk factors for chronic disease.
- Target Pap tests and mammography screening programs to groups with low participation rates.
- Tackle the root causes of disease, which include problems with feelings and relationships, coping skills, poverty, marginalization, and stress.
- Continue to develop and collect indicators to measure quality of life for persons with mental illness and chronic disabling conditions.

Objectives

- Reduce or maintain current very low levels of vaccine-preventable diseases.
- Reduce cases of active tuberculosis.
- Reduce HIV infection rates.
- Reduce sexually transmitted diseases.
- Reduce waterborne and foodborne diseases.
- Reduce the incidence and spread of infectious diseases, particularly emerging infectious diseases, through improved surveillance.

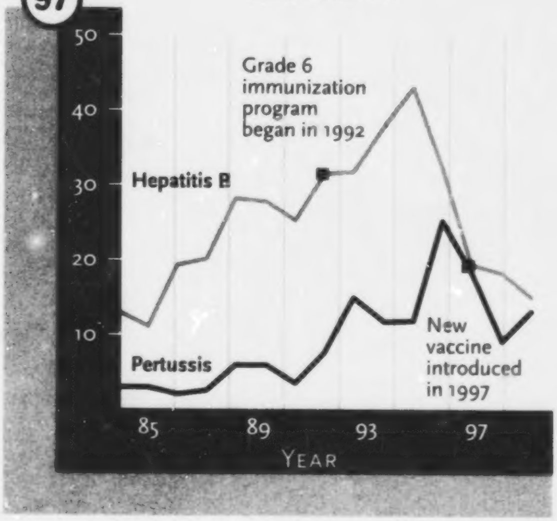
Communicable diseases are those that may be transmitted, directly or indirectly, from one individual to another. Although communicable diseases as a group cause fewer deaths than in the past, they have not been eradicated and require a strong maintenance program of prevention and control. This section presents a brief overview of trends in vaccine-preventable diseases, tuberculosis, HIV, sexually transmitted diseases, and waterborne and foodborne diseases. The B.C. Centre for Disease Control Society produces more comprehensive statistics and reports on a regular basis (http://www.bccdc.org).

What Do the Data Show?

- Thanks to immunization, smallpox has been eradicated, several other major diseases have been substantially reduced, and the elimination of measles and polio is within sight. Hepatitis B, hepatitis A, influenza, invasive pneumococcal disease, and other vaccine-preventable diseases could be further reduced, with continued commitments to our immunization programs.
- Tuberculosis remains a problem, especially among immigrants and the Aboriginal population.
- Overall, HIV rates have declined, but the pattern of this disease continues to change. Infections among heterosexuals are increasing.
- Gonorrhea and syphilis are much less common today than in the past. Outbreaks – such as the syphilis outbreak that began in Vancouver in 1997 – could make it difficult to reach the national goal of eliminating these two sexually transmitted diseases by 2010.
- Waterborne and foodborne illnesses are common, although we do not have a way to track these statistics precisely. In a recent national survey, one in five British Columbians said that they had had a foodborne illness in the past year.

Figure 97 Pertussis and Hepatitis B

B.C., 1985-1999



Reported cases, expressed as a rate per 100,000 population. 1999 figures are preliminary. Source: Epidemiology Services, B.C. Centre for Disease Control Society. For 1992-1999, hepatitis B includes acute cases (persons recently infected) and undetermined cases; some of the undetermined cases will ultimately be classified as chronic.

Vaccine-Preventable Diseases

British Columbia has made good progress toward meeting national goals for the reduction of vaccine-preventable diseases in infants and children (Table 11). Although not all goals have yet been achieved, tremendous advances have been made over the years. Before immunization programs were in place, diseases such as diphtheria, polio, and measles were rampant. Today, vaccines prevent many thousands of cases of illness in British Columbia each year. Diphtheria and polio have all but disappeared, and the elimination of measles is in sight.

Pertussis and hepatitis B have been more difficult to control (Figure 97). A new pertussis vaccine was introduced into British Columbia's infant and preschool immunization program in 1997. This was a major advance, as the new vaccine is more effective in preventing pertussis and has milder, less frequent side effects than the previous vaccine. The new vaccine should lead to a reduction in pertussis cases in the coming years, particularly in the younger age groups.

The grade six immunization program for hepatitis B has been in place since 1992. After experiencing rising rates, the number of new cases of hepatitis B began to decline in 1996. However, hepatitis B remains a problem in British Columbia. Since hepatitis B vaccine is safe and provides long-lasting protection, transmission of this disease could be prevented if immunization programs were expanded.

Pneumococcal disease and influenza continue to be a major cause of illness, hospitalization, and death among the elderly and among people with certain medical conditions. As well as causing people to suffer from a long, miserable illness, pneumococcal disease and influenza place a great burden on the health care system, particularly during the winter "influenza season".

In temperate climates such as Canada's, influenza epidemics occur each year. Typically, the number of cases peaks during the winter months. Based on historical trends and scientific knowledge, many expects believe that a world-wide epidemic (called a pandemic) of influenza is overdue. A national pandemic plan is being developed by Health Canada in conjunction with the provinces. Within B.C., each local health authority, as well as the province overall, should be preparing for an outbreak, as part of their overall emergency planning. Being ready for outbreaks requires planning and resources beyond those needed for routine immunization programs. However, one of the best ways to prepare for outbreaks is to maintain high levels of immunization at all times, so that fewer people will need to be immunized when an outbreak does occur. Immunization levels are discussed further under Goal 4 (pages 85 - 86).

Table

⑪ Progress in Reduction or Elimination of Vaccine-Preventable Diseases, B.C.

Disease	Goals/Targets		Current Status
Diphtheria	Eliminate indigenous cases by 1997	◗	No cases reported 1995 through 1998. One case in 1999.
Invasive Hib infections	Achieve and maintain absence of preventable cases in children by 1997	◗	2 cases in children in 1998. Prior to the introduction of Hib vaccine, there were more than 100 cases of invasive Hib disease each year, and most of these were young children.
Hepatitis B	Reduce prevalence of indigenously acquired chronic infections in children and young adults by 90% by 2015	?	40 chronic cases reported in children (age 0-14) and 345 in youth (age 15-24) in 1999. No provincial information on whether cases were acquired indigenously (locally) or through migration or travel to an infected area. Acute cases also occur in children; one acute case age 0-14 reported in 1999, but most cases in children are asymtomatic.
Measles	Achieve incidence of less than 1 per 100,000 by 2000	◗	Rate has been at or below 1 per 100,000 since 1993, except in 1997. In 1997, rate increased to 7 per 100,000 due to an outbreak that started among students at Simon Fraser University.
	Eliminate indigenous cases by 2005	◗	Two-dose measles schedule introduced in 1996. The goal to eliminate indigenous cases by year 2005 is attainable.
Mumps	Maintain active prevention program to minimize serious effects	?	Control being maintained through high immunization rates. Number of reported cases is now very low (18 cases in 1998, 20 cases in 1999). Serious effects resulting from mumps are not tracked on a provincial basis. In a 1997 outbreak, effects (severe headache, testicular swelling/pain, pancreatitis) occurred at rates similar to those reported in the literature.
Pertussis	Reduce illness and deaths related to pertussis	)	Rates of illness are cyclical, but generally increasing. Deaths still occur (two children died from pertussis in 1996 and one in 1998). New vaccine introduced in 1997 should lead to reduction in cases and complications in the coming years.
	Have all reported cases managed appropriately	?	There are procedures for treatment of cases and contacts. Case management is reviewed locally, but no provincial information for evaluating compliance.
	Reduce intensive care admissions 50% by 1997	)	50 per cent reduction not achieved. However, the number of intensive care admissions is very small (2-9 cases per year over past decade).
Polio	Maintain elimination of wild indigenous cases	●	Achieved. Last B.C. case reported in 1979.
	Prevent future imported cases	◗	Risk of imported cases is still present. Immunization rates must be maintained.
Rubella	Eliminate congenital rubella syndrome by 2000	◗	No cases of congenital rubella reported in 1998 or 1999. Two cases diagnosed and reported in 1997, in children who were born in 1984 and 1995.
Tetanus	Maintain elimination of tetanus in newborns and children	●	Achieved. No cases in newborns or children in the past decade.

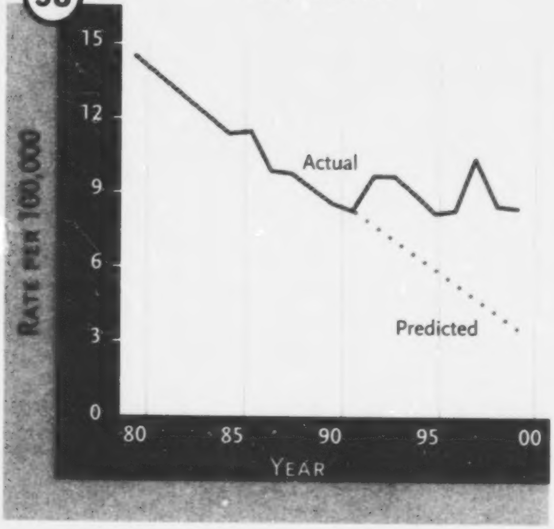
[illegible]

[illegible] ● [illegible] ◗ [illegible]) [illegible] ? [illegible]

Figure 98

Tuberculosis Rates

B.C., 1980-1999



Active cases of tuberculosis (new active and reactivated) as a rate per 100,000 total population.
Source: Division of Tuberculosis Control, B.C. Centre for Disease Control Society.

Tuberculosis

Although tuberculosis rates have declined dramatically in this century, we have not yet eradicated this disease in British Columbia. In fact, the previously observed rate of decline began to level off in the 1990s (Figure 98). The increase in 1997 was due to a large number of immigrants who arrived in the preceding few years (Division of Tuberculosis Control, 1999).

In British Columbia, about two-thirds of tuberculosis cases – 229 of the 337 cases in 1998 – occur among foreign-born immigrants. Many immigrants to British Columbia come from developing countries, particularly in Asia, where tuberculosis is common. Of the foreign-born persons who develop tuberculosis, about half are diagnosed within five years of immigration. Although screened abroad for immigration purposes, a minority have entered the country with active disease; or the effects of immigration – such as stress and change in diet – may have been sufficient to reactivate dormant infection. Other risk groups include the Aboriginal population and persons affected by poverty, poor housing conditions, or HIV.

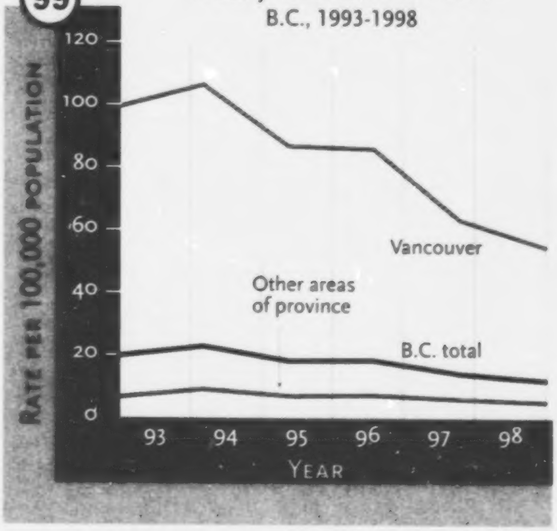
By geographic region, Vancouver has the highest tuberculosis rates – three times the provincial average. To control – and eventually eradicate – this disease will require a world-wide effort to improve disease prevention, detection, and treatment.

So far, drug resistance has not become a major problem in British Columbia. However, some cases – 28 in 1998 – are resistant to one or more tuberculosis medications. Drug resistance patterns are being closely monitored.

Figure 99

Persons Testing Newly Positive for HIV

B.C., 1993-1998



Source: STD/AIDS Control, B.C. Centre for Disease Control Society. HIV/AIDS Update: Year End 1998, pages 26-27.

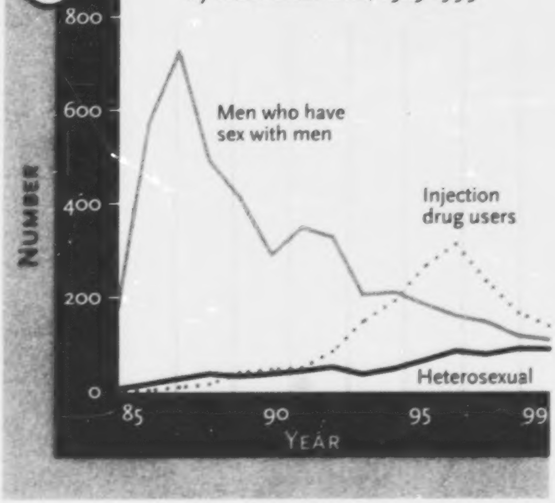
HIV

Overall, the rate of new HIV infections has been declining in British Columbia (Figure 99). Regionally, Vancouver has the most cases – 307 of the 482 new positive cases reported in 1998 – and by far the highest rates. However, new HIV-positive cases occur in all regions of the province. Aboriginal people comprise approximately 15 per cent of those testing newly positive.

Figure 100

Persons Testing Newly Positive for HIV

By Risk Factor B.C., 1985-1999



Source: STD/AIDS Control, B.C. Centre for Disease Control Society. Figures for 1999 are preliminary.

There has been a change in the patterns of HIV infection. Men who have sex with men were the predominant risk group throughout the 1980s. In 1995, injection drug users surpassed them to become the group with the highest number of positive HIV tests. The outbreak in injection drug users appears to have peaked in 1996, and has been on the decrease in this population. Meanwhile, infections among the general heterosexual population have been increasing, and the number of new cases in heterosexuals may soon surpass those in men who have sex with men (Figure 100).

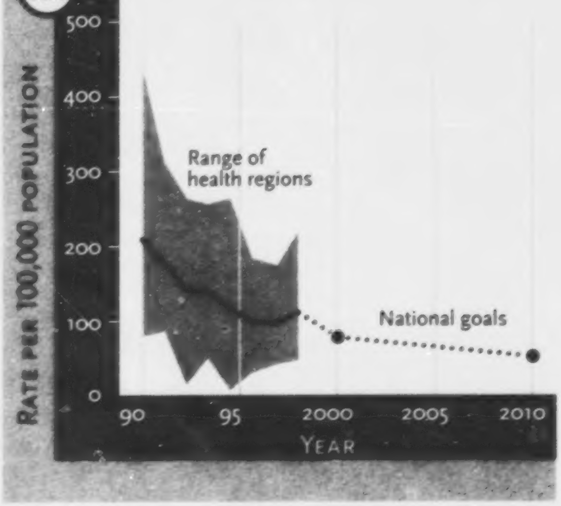
Sexually Transmitted Diseases

Chlamydia is one of the most common sexually transmitted diseases – 4,769 cases were reported in 1998. Like many sexually transmitted diseases, chlamydia presents greater risk and complications for women than for men. Complications can include reproductive tract infections, infertility, as well as increased risk for spontaneous abortion and stillbirth.

Figure 101

Chlamydia

B.C., 1991-1998



New notifications of Chlamydia. Source: STD/AIDS Control, B.C. Centre for Disease Control Society.

Chlamydia rates remain high, although there has been an encouraging downward trend since this disease first began to be systematically monitored in 1991(Figure 101). A portion of the increase in 1998 may be due to increased efforts to locate and test sexual contacts of identified cases, as well as improvements in testing technology. If prevention and case-finding efforts are successful, we should see rates begin to decline within the next few years.

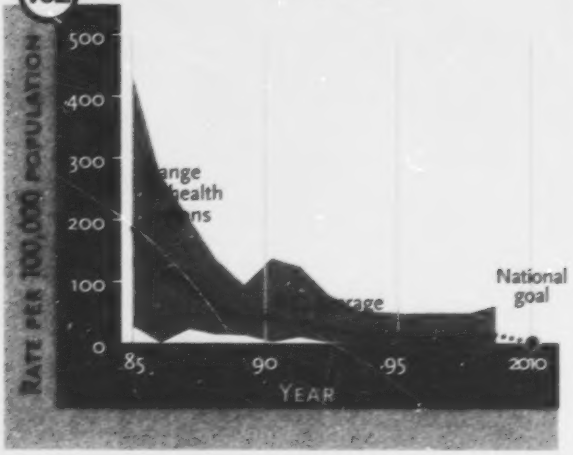
Gonorrhea has been decreasing(Figure 102). 541 cases were reported in 1998, compared with 5,556 cases in 1985. The increase between 1997 and 1998 occurred primarily among residents of Vancouver, who accounted for 343 of the 541 cases.

Until recently, infectious syphilis was uncommon and on the decline, with only 18 cases reported in 1996. In 1997, an outbreak began, and 112 cases were reported in 1998 (Figure 103). The outbreak appears to be related to the sex trade in the Downtown Eastside of Vancouver, an area in which there have also been outbreaks of HIV and hepatitis C.

Many experts believe that elimination of locally-transmitted gonorrhea and syphilis is an attainable goal. This will require continued efforts to control outbreaks and to reach high-risk groups, which include sex trade workers, men who have sex with men, immigrants from countries with high rates of disease, and travellers who have had sex in those areas.

Figure 102 Gonorrhea

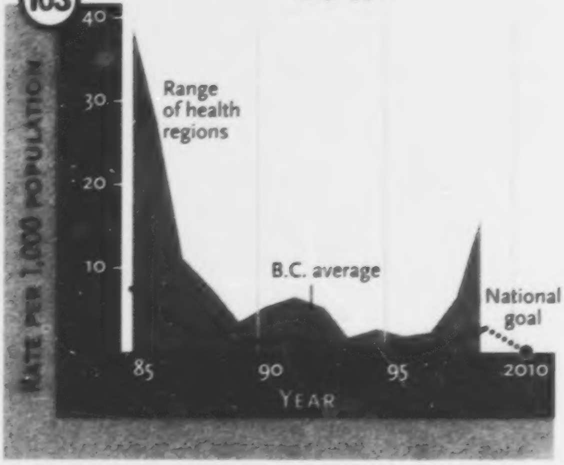
B.C., 1985-1998



New notifications of Gonorrhea
Source: STD/AIDS Control, B.C. Centre for Disease Control Society.

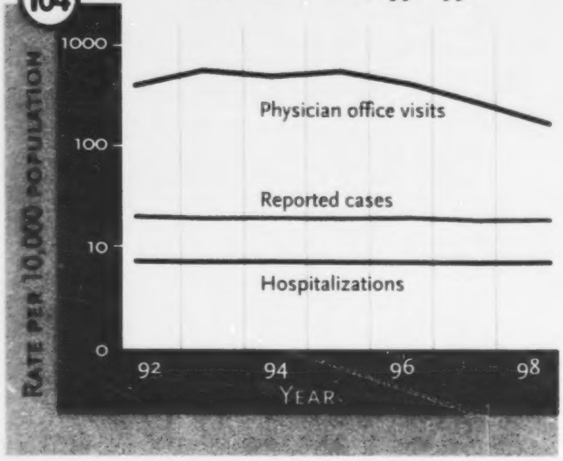
Figure 103 Infectious Syphilis

B.C., 1985-1998



New notifications of infectious syphilis.
Source: STD/AIDS Control, B.C. Centre for Disease Control Society.

Figure 104 Food & Waterborne Diseases B.C., 1992-1998



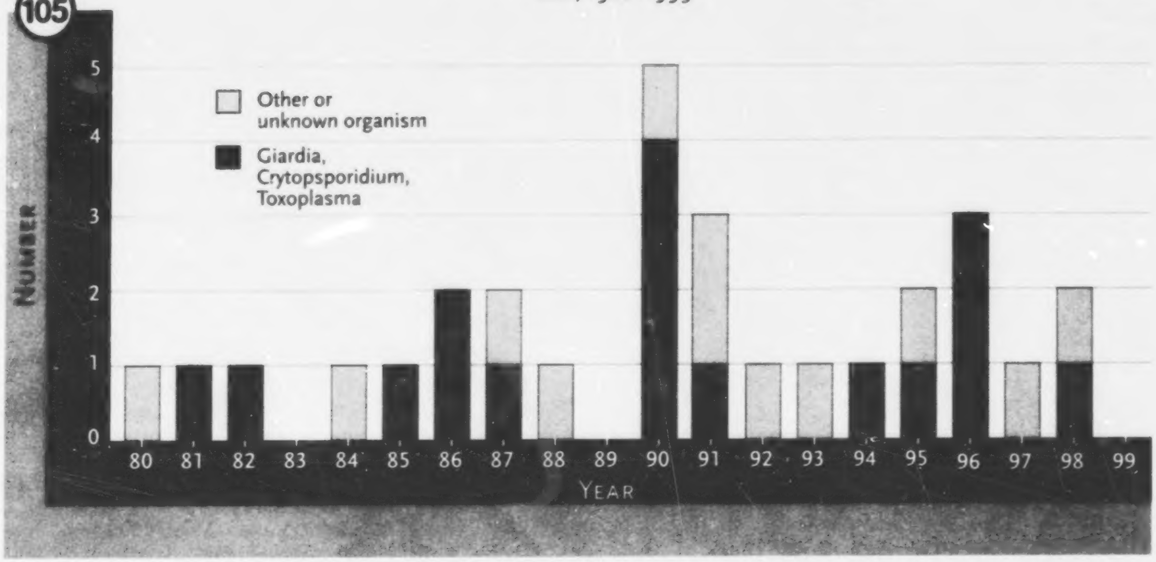
Physician office visits, cases reported to health authorities, and hospitalizations due to intestinal infectious diseases. Sources: Medical Services Plan (physician office visits). Epidemiology Services, B.C. Centre for Disease Control Society (reported cases). Morbidity Database (hospitalizations).

Enteric (Intestinal) Communicable Diseases, including Foodborne and Waterborne Diseases

Intestinal diseases such as salmonellosis, giardiasis ("beaver fever"), and E. coli infection are often caused by consuming contaminated food or water. Based on the trend data we have available, we know that intestinal illnesses continue to occur in British Columbia, accounting for 2,249 hospitalizations, 7,095 reported cases, and 167,563 visits to doctors' offices in 1998/99 (Figure 104). Deaths from food and waterborne diseases are uncommon. However, the 6 recent deaths caused by E. coli from a water source in Walkerton, Ontario are a reminder that drinking contaminated water can be fatal.

Figure 105

Waterborne Disease Outbreaks
B.C., 1980-1999



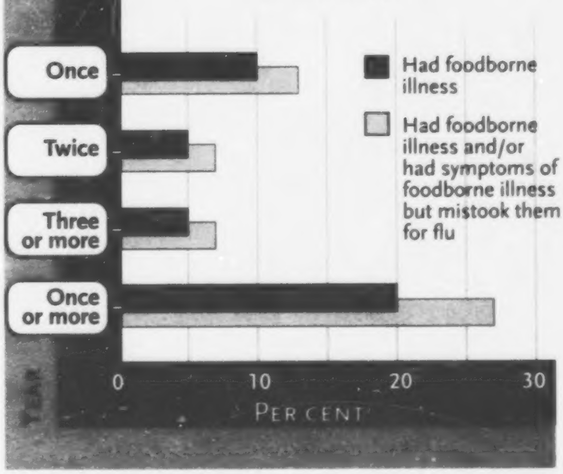
Outbreaks in which contaminated water was the likely source,based on the medical health officer's assessment of the evidence.
Source: Public Health Protection Branch, B.C. Ministry of Health.

There are usually one or two recognized waterborne disease outbreaks in British Columbia each year. Of the 29 outbreaks reported since 1980, more than half have been caused by parasites (Giardia, Cryptosporidium, and Toxoplasma) that are more resistant to commonly-used disinfectants such as chlorine (Figure 105).

The extent of foodborne and waterborne illnesses is not known precisely, as many cases are not recognized or reported. According to a 1998 survey, one in five British Columbians said that they had had a foodborne illness in the past year. When symptoms of foodborne illness were explained, this figure rose to 27 per cent, because many people had additional instances of foodborne illness that they had mistaken for the 24-hour flu (Canadian Food Inspection Agency, 1997) (Figure 106). Numerous outbreaks of foodborne disease occur each year in British Columbia. The largest outbreak in 1999 was caused by salami contaminated with E. coli O157:H7.

Figure 106

Had Foodborne Illness in Past Year
British Columbians Age 18 and Over, 1998



Source: Environics Research Group Ltd. 1998 Safe Food Handling Study. A report for the Canadian Food Inspection Agency, June 1997.

Food and waterborne infections can be prevented through activities such as water treatment, watershed management, and promotion of safe food handling and storage practices. Hand washing is a simple but effective way to prevent the spread of intestinal diseases.

The Provincial Health Officer is developing a special report on Drinking Water Quality, planned for release in December 2000.

Emerging Infectious Diseases

In spite of immunization, drug treatments, and other means of prevention and control, infectious diseases continue to emerge or re-emerge as a public health threat. Two areas that have been receiving special attention in British Columbia are hepatitis C and infections resistant to antibiotics.

Hepatitis C, a disease of the liver caused by the hepatitis C virus, was first identified in 1989. Surveillance and research are helping to identify the number of people infected, the ways in which the disease is spread, and the best methods for treatment.

An estimated 1 per cent of the population are infected with hepatitis C, based on special studies of blood samples in British Columbia (B.C. Centre for Disease Control, Epidemiology Services, 1999). Most of the 6,809 new cases reported in 1998 were actually individuals who had been infected in the past, but who were previously undetected. Many of the cases that occurred before 1990 were associated with blood transfusions, but injection drug use is now the most important risk factor, accounting for half of all new cases.

At this time, there is no vaccine for hepatitis C. New therapies are being evaluated, and these may lead to a cure. To reduce the occurrence and impact of this disease and other forms of hepatitis, the Vancouver/Richmond Health Board has developed a provincial strategy for viral hepatitis (Hepatitis A, B, and C). The Ministry of Health is currently considering the strategy, which includes plans for prevention, treatment, and physician education. As part of this strategy, the Ministry of Health has provided 9.5 million dollars annually for Rebetron, a new drug treatment that is effective in slowing the disease progression for some people living with this chronic condition.

Laboratories are required to report cases of certain bacterial infections that are resistant to antibiotics. However, antibiotic resistance poses a significant and growing threat, and many scientists warn that immediate attention is required to prevent the loss of antibiotics as useful weapons against infectious diseases. Methicillin Resistant Staphylococcus aureus (MSRA) and Vancomycin Resistant Enterococci (VRE) have become common in many hospitals settings and are responsible for illness and death in an increasing number of elderly and vulnerable patients. Streptococcus pneumoniae, the organism responsible for most childhood ear infections, has become increasingly resistant to penicillin and other antibiotics. British Columbia is currently developing a provincial action plan on antimicrobial[5] resistance. The plan is expected to identify four key areas for action: surveillance, case management, education/awareness, and animal/agricultural use (B.C. Antimicrobial Resistance Action Plan Steering Committee, 2000). Surveillance activities to date have focussed on MRSA, VRE, and invasive pneumococcal disease. Looking ahead, the provincial surveillance of antimicrobial resistance could be expanded to cover other target organisms.

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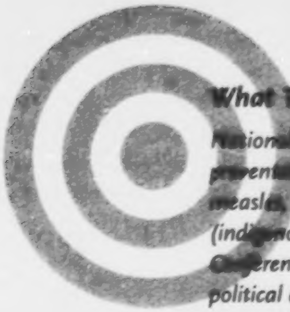
[5] *The term antibiotic resistance refers to drugs designed to kill bacteria. Antimicrobial resistance is a broader term, referring to drugs or disinfectants designed to kill other types of organisms (viruses, parasites, funguses, as well as bacteria).*



What Targets Are Achievable?

National goals and targets have been developed for reducing or eliminating nine vaccine-preventable diseases of infants and children: diphtheria, invasive Hib infections, hepatitis B, measles, mumps, pertussis, polio, rubella, and tetanus. One goal – elimination of (indigenous) measles by the year 2005 – was officially adopted as a national goal by the 1995 Conference of Deputy Ministers of Health. Although the full set of goals has not received political endorsement, the goals have been endorsed by many professional organizations across Canada. In British Columbia, formal adoption of the goals was recommended by the Provincial Health Officer in his 1998 feature report on immunization.

For influenza and pneumococcal disease, it is estimated that at least half of the deaths, hospitalizations, and physician visits for these two diseases can be prevented with full implementation of the recommended immunization programs (National Advisory Committee on Immunization, 1998). Recent studies in Manitoba, Ontario, and the United States have found that influenza activity is linked to surges in hospital admissions (Menec, Roos, Nowicki, MacWilliam, Finlayson, & Black, 1999; Upshur & Goel, 2000; Simonsen, Fukuda, Schonberger, & Cox, 2000). Emergency room and hospital crowding that occur every winter during influenza season could be reduced, if more people were immunized against these diseases. After age 65, everyone should receive influenza vaccine each year and at least one dose of pneumocococcal vaccine. These vaccines are also recommended for persons with chronic diseases in all age groups, residents of care facilities, and those who could transmit the disease to people in high-risk groups. Ideally, immunization programs aim to immunize at least 90 per cent of eligible recipients. An immunization campaign focusing on seniors and health care workers will take place in the fall of 2000; specific targets have been set for increasing immunization rates in these groups (see page 91).

Health Canada's Tuberculosis Prevention and Control division has a long-term goal to eliminate tuberculosis in Canada – an incidence of less than one case per 100,000. This will be an ambitious goal for British Columbia, based on our current rate of 8.4 cases per 100,000. The B.C. Centre for Disease Control is currently looking at the feasibility of eliminating tuberculosis from British Columbia and the steps that could be taken to achieve this. Part of this planning process will include setting targets for reducing tuberculosis in B.C., overall and among high-risk groups such as immigrants and the Aboriginal population.

British Columbia's Framework for Action on HIV/AIDS includes a goal "to reduce the number of new infections and reduce the spread of HIV" (B.C. Ministry of Health, 1998). Targets proposed by the Provincial Health Officer in his 1996 Annual Report include reducing the rate of transmission in all groups and eliminating mother-to-child transmission.

National goals for the prevention and control of sexually transmitted diseases have recently been established. Examples of goals for disease reduction include reducing the overall rate of chlamydia to less than 80 per 100,000 by the year 2000 and elimination of endemically-acquired (acquired in Canada) gonorrhea and syphilis by the year 2010 (Health Canada, Laboratory Centre for Disease Control, Division of STD Prevention and Control, 1997; 1999). Provincially, British Columbia continues to target syphilis transmission for elimination, and the province is formulating plans for the elimination of gonorrhea. Formula-based goals, e.g., to reduce incidence by a certain percentage, are sometimes used in setting local targets; this approach is particularly appropriate for jurisdictions that are significantly above or below the provincial average. Target-setting needs to allow for improvements in testing. If testing technology improves and/or more people are tested, the reported rates of disease may go up.

It is difficult to set a target for reducing the rate of foodborne and waterborne diseases, because we lack precise data on the extent of these diseases. A target of zero waterborne or foodborne outbreaks is a certainly a goal towards which to aim, but this may not be achievable. Even with careful management of food and water supplies, it is not possible to eliminate all risks to the public.

What Actions Can We Take?

Individuals and families can:

- Make sure all family members have an immunization record, and that immunizations are kept up-to-date.
- Talk with your children about sexuality and sexual health.
- Follow practices that reduce the risk of sexually transmitted diseases, e.g., condom use.

The health system can:

- Strengthen immunization programs, by taking action on the 81 recommendations in the Provincial Health Officer's 1998 Feature Report on immunization.
- Develop plans for managing the expected world-wide epidemic of influenza.
- Ensure early diagnosis, appropriate treatment, and follow-up of all tuberculosis cases, with special attention to immigrants, the Aboriginal population, and other high-risk groups. Improve the social and economic conditions that facilitate the spread of tuberculosis, such as poverty and poor housing.
- Continue to work on implementing British Columbia's Framework for Action on HIV/AIDS.
- Make continued efforts to locate and treat all individuals who have been in contact with gonorrhea, syphilis, and chlamydia infection. Work with health authorities from across the country to develop and implement a national strategy for eliminating transmission of syphilis and gonorrhea in Canada.
- Pay continued attention to water systems and the food supply, to minimize the risk to the public from waterborne and foodborne diseases.
- Continue to improve British Columbia's capabilities to monitor and control antimicrobial resistance, by expanding surveillance activities, developing province-wide standards for infection control, raising public and professional awareness about the appropriate use of antibiotics, and improving the understanding of the role of antimicrobial use in animal health and its possible contribution to antimicrobial resistance.
- Approve the draft provincial strategy for viral hepatitis.

Objectives

- Reduce unintentional injuries and premature deaths.
- Reduce deaths from the use of illegal drugs.
- Reduce injuries and deaths from interpersonal violence and abuse.
- Reduce suicides.

Injuries are often classified into two major categories: unintentional injuries, such as those due to motor vehicle crashes, falls, drowning, burns, or poisoning and intentional injuries, which includes those caused by child abuse, family violence, suicide, and homicide. This section includes some examples of indicators from each of these categories.

What Do the Data Show?

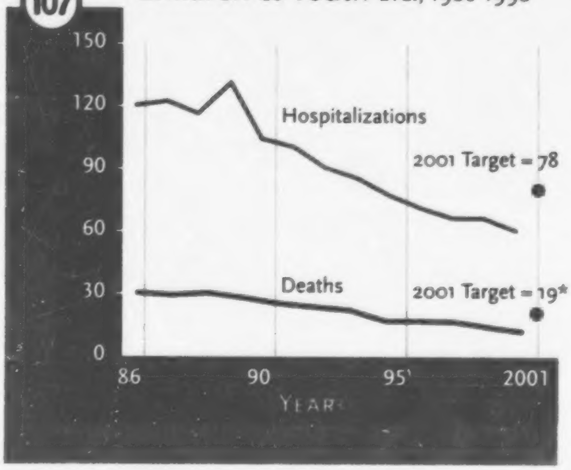
- 1,627 British Columbians died from unintentional injuries in 1998. Most of these injuries could have been prevented, if proven prevention methods had been implemented.
- Falls are a major problem for the elderly. Approximately 4,300 people age 65 and older were hospitalized for a hip fracture in 1998/99.
- The epidemic of illicit drug overdose deaths that began in 1993 is not showing any signs of a decline. There were 287 deaths in 1999.
- Between 9,000 and 10,000 spousal assaults are reported in B.C. each year. There were 5,433 confirmed cases of child abuse in 1998/99 – twice the number that occurred in 1993/94. Although there are limitations to these statistics, it is clear that child abuse and family violence are far too common.
- Suicide is a major cause of preventable death. About 500 British Columbians take their own lives each year.

Unintentional Injuries

Over the years, we have made impressive progress in reducing injuries, through prevention methods such as seatbelts, bicycle helmets, stricter sanctions against drinking and driving, smoke detectors, and child-proof caps for medications.

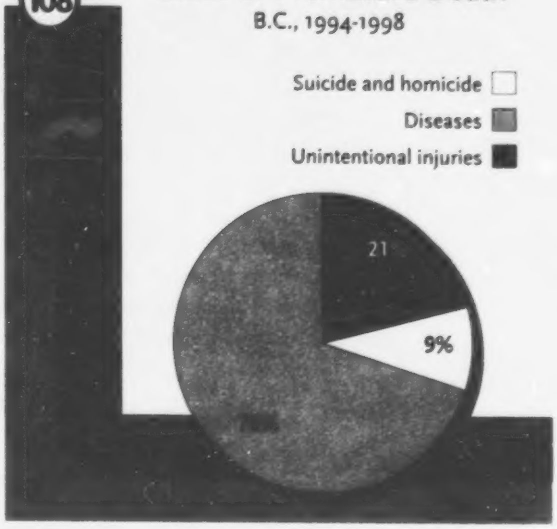
In 1997, *BC – Injury Free*, an injury prevention plan for children and youth, was released by the Minister of Health's Injury Prevention Advisory Committee. This Plan established goals, objectives, targets, and strategies for reducing injuries in the birth to 24 age group. Six types of injuries were identified as priorities for action: traffic, fire and burns, drowning and water-related injuries, workplace injuries, home and residential injuries, and sports and recreation. Since the baseline years (1990-1994), injury deaths and hospitalizations have continued to decline, and the year 2001 targets have already been met (Figure 107).

Figure 107 Unintentional Injuries Children & Youth B.C., 1986-1998



***N.B. Actuals are below target since 1994.**
Rate: Deaths per 100,000 and hospitalizations per 10,000 population age 0-24.
Sources: B.C. Vital Statistics Agency (deaths) and LAN Accident Reporting System version 3.0 (hospitalizations). Targets are based on a 15 per cent reduction from baseline rates (annual averages for the 5-year period 1990-1994, which were 91.3 per 10,000 for hospitalizations, 22.6 per 100,000 for deaths).

Figure 108 Injuries - A Major Cause of Premature Death B.C., 1994-1998

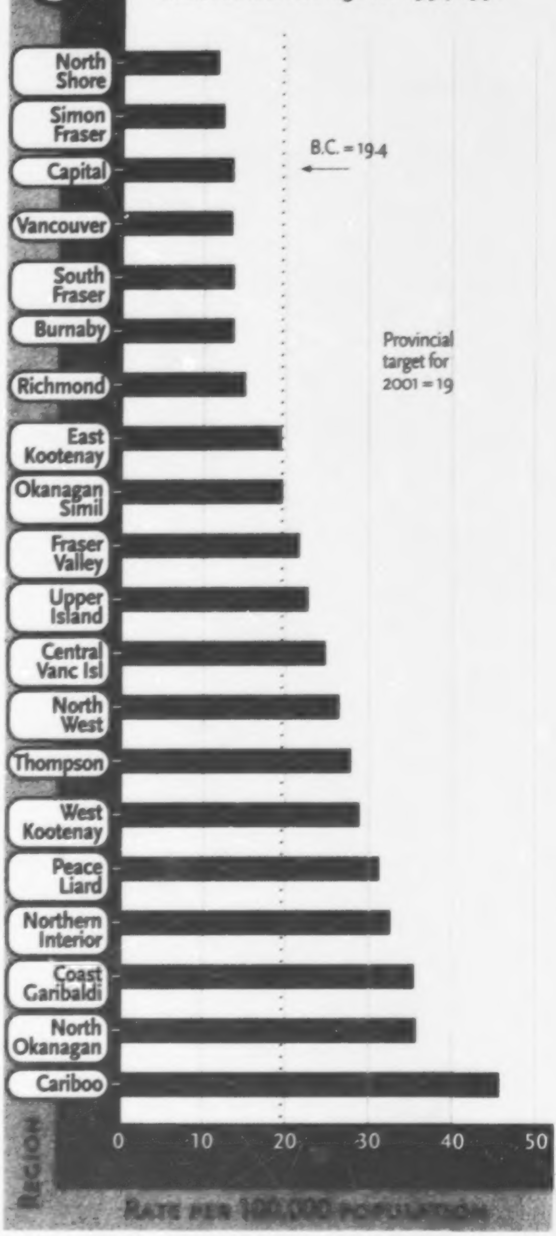


Premature death: Potential years of life lost (before age 75).
Source: B.C. Vital Statistics Agency, Ministry of Health. Vital Statistics Annual Reports.

Although injury death rates have been improving, unintentional injuries – in traffic, in the home, at play, and in the workplace – remain a major cause of death and disability in this province. In 1998, 1,627 British Columbians died from unintentional injuries. Because many injury deaths occur in the younger age groups, injuries account for a large proportion of Potential Years of Life Lost. Unintentional injuries cause about 6 per cent of deaths, but they cause 21 per cent of all Potential Years of Life Lost (Figure 108).

Figure 109 Unintentional Injury Deaths, Children and Youth

B.C., Annual Average for 1994-1998



Rate: Unintentional injury deaths per 100,000 population age 0-24 (crude rate). Source: B.C. Vital Statistics Agency. Unpublished tables, January 2000.

Within the province, the Lower Mainland and Capital regions are achieving very low injury rates. In some areas, though, children and youth are at much greater risk of dying from injuries (Figure 109).

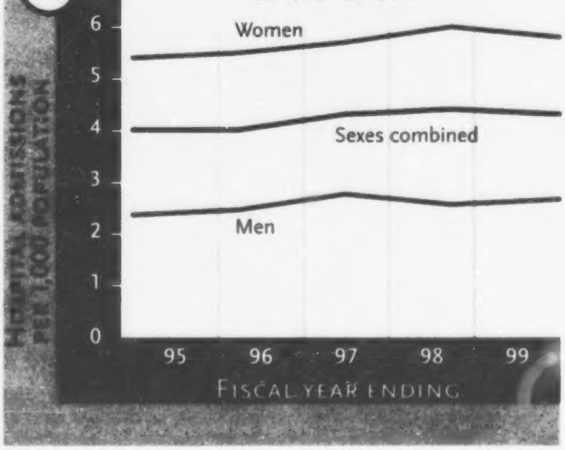
Hip Fractures

Falls are a major problem for the elderly. Hip fractures, which are often the result of a fall, can cause disability and complications leading to death. Falls are also painful and frightening. After a fall, fear of falling may cause a person to lose confidence in their ability to engage in their usual physical and social activities, resulting in isolation and withdrawal.

Approximately 4,300 people age 65 and older were hospitalized for a hip fracture in 1998/99. The hospitalization rate has not changed much over the past five years (Figure 110). Hip fractures are more common among women, in part because women have higher rates of osteoporosis, a condition in which bones become so thin and brittle that they break easily.

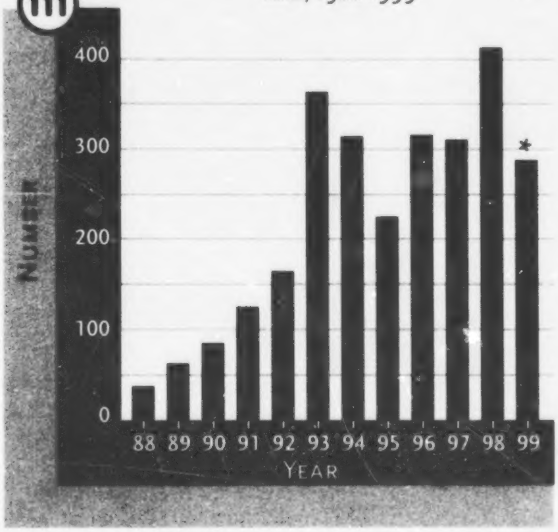
Figure 110 Hip Fractures

B.C. Population Age 65 and Older, 1994/95-1998/99



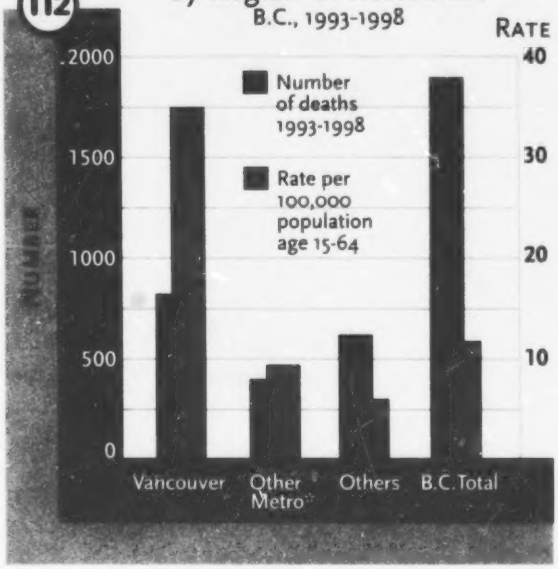
Hospitalizations age 65 and older due to hip fractures, acute and rehabilitation care. Source: Morbidity Database. Information Support, Regional Programs, B.C. Ministry of Health. Unpublished tables.

Figure 111 Illicit Drug Overdose Deaths
B.C., 1988-1999



**Preliminary figures; 1999 case files are only 75% complete.*
Number of deaths due to or the consequence of an illicit drug overdose.
Source: B.C. Coroners Service, Ministry of Attorney General. Unpublished tables.

Figure 112 Illicit Drug Deaths by Region of Residence
B.C., 1993-1998



**Other metro includes Simon Fraser, Burnaby, Richmond, North Shore, and Capital regions. Total number of deaths (age 15-64) and average annual rate over the six-year period 1993-1998.*
Source: B.C. Coroners Service and BC STATS population estimates.

Illicit Drug Deaths

British Columbia continues to experience an epidemic of illicit drug overdose deaths. Overdose deaths have remained high since 1993 and are not showing signs of decline (Figure 111). The typical victim is a male, age 35-39, who died while using heroin, in combination with cocaine, alcohol, or other drugs. Many illicit drug users are from disadvantaged groups, living on the margins of society, but there are others who are employed, working individuals.

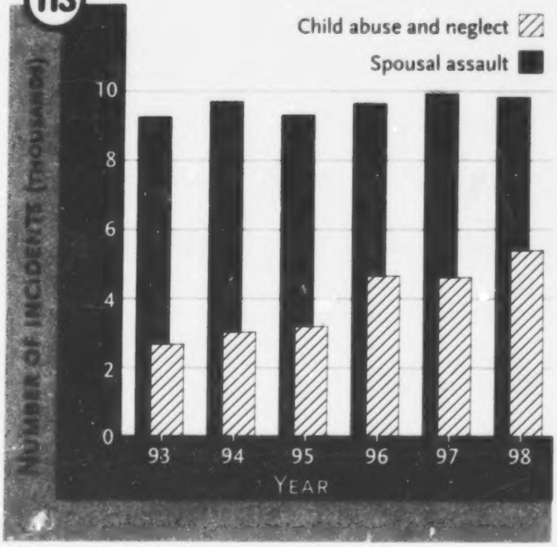
While the problems associated with injection drug use are concentrated in Vancouver, overdose deaths are not a Vancouver phenomenon. About 20 per cent of the deaths since 1993 have been residents of other metropolitan regions (Simon Fraser, Burnaby, Richmond, North Shore, and Capital), and one-third have been residents of other regions of the province (Figure 112).

These overdose deaths are the final manifestation of the harm that can result from illicit drug use. The misuse of drugs contributes to numerous health and social problems, including family breakdown, the spread of HIV and hepatitis, and violence and criminality associated with illicit drug trade. Our best estimates are that there are about 15,000 regular, frequent injection drug users in British Columbia – 11,000 to 12,000 in the Lower Mainland and up to 6,000 living in Vancouver.

Since the Chief Coroner's report on narcotics-related deaths was released in 1995, the media, government, the addiction treatment community, and the City of Vancouver have come together to tackle the public health crisis concerning illicit drug use in the Downtown Eastside of Vancouver. Vancouver has greatly augmented its education and support programming in the Downtown Eastside area, and access to methadone maintenance therapy has increased substantially across the province. These efforts are a good start, but we must continue to build on these efforts.

Figure 113

Family Violence
B.C., 1993-1998



Child abuse: Confirmed reports of abuse or neglect of children and youth age 0 to 18, fiscal years 1993/94 to 1998/99. Data refer to child protection complaints that result in a section 16 investigation and a finding by the worker, in consultation with the supervisor, that the child is in need of protection. Such a finding does not necessarily result in admission to care, as other protective services may be more suitable. B.C. Ministry for Children and Families. Spousal assault: Number of incidents reported to or by police. Police Services Division, B.C. Ministry of Attorney General. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

Child Abuse and Neglect

The number of confirmed cases of child abuse increased to 5,433 in 1998/99, for a rate of 5.7 cases per 1,000 children and youth age 0 to 18. Since 1993/94, the number of child protection reports has doubled in British Columbia (Figure 113), and similar increases have occurred in other provinces. A portion of the increase may be due to increased awareness and reporting of child abuse situations, as well to changes in child welfare legislation.

It is difficult to obtain a reliable estimate of the actual number of children and youth who are abused, because statistics are based on the number of cases that are reported to child welfare authorities. However, with so many confirmed cases occurring, we must conclude that many children are not receiving the safe and nurturing environments they need for healthy development.

Spousal Assault

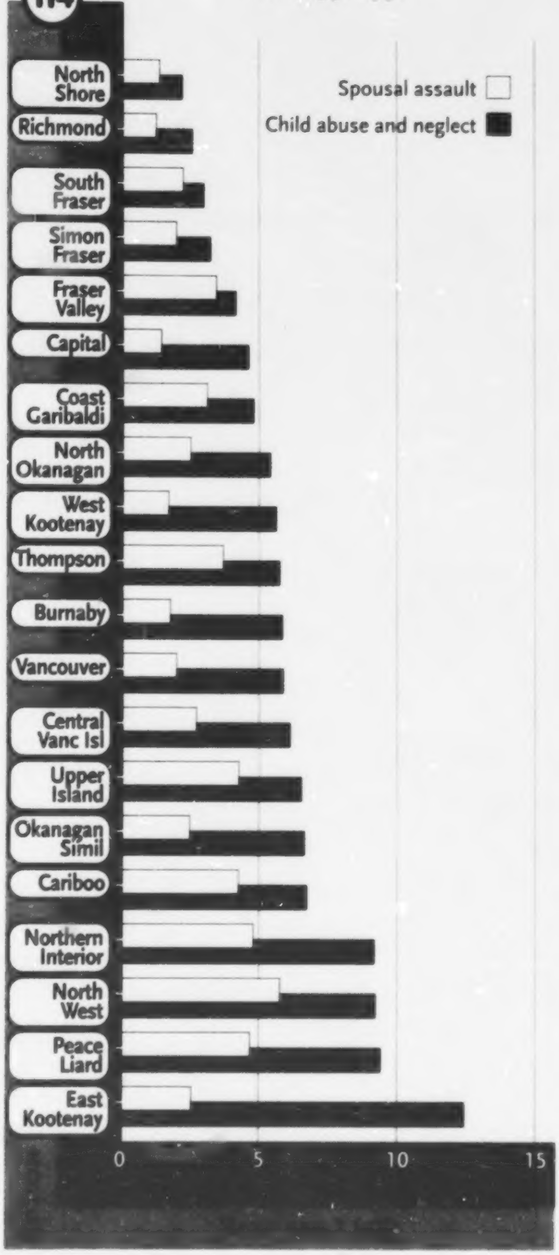
The number of spousal assaults reported in British Columbia has remained fairly stable since 1993, with between 9,200 and 10,000 incidents reported each year.

Like child abuse, there are cases of spousal assault that are not reported. However, incidents that are reported provide one measure of violence that is occurring in families, against women in particular. Based on police statistics, the typical victim is a women age 25-35, assaulted by a common law partner of about the same age. Alcohol is a factor in about one-half of all spousal assault incidents (B.C. Ministry of Attorney General, 1999).

Crime rates vary throughout the province, with rates generally higher in the north. This pattern applies to spousal assaults and child abuse reports as well (Figure 114). Based on the rates shown in Figure 114, spousal assault may appear to be less common than child abuse. This is because spousal assault rates are usually shown as a rate per 1,000 total population (for comparability with other crime statistics), while child abuse rates are calculated per 1,000 population age 0 to 18.

Figure
114

Family Violence
B.C., 1996-1998



Child abuse: Confirmed reports of abuse or neglect (as defined under the Child, Family and Community Service Act), per 1,000 population age 0 to 18, annual average for two-year period (fiscal years) 1997/98 and 1998/99. B.C. Ministry for Children and Families and BC STATS population estimates. Spousal assault: Incidents per 1,000 total population, 3-year average for 1996 to 1998. Police Services Division, B.C. Ministry of Attorney General. Obtained from the Health Data Warehouse, B.C. Ministry of Health.

Suicide

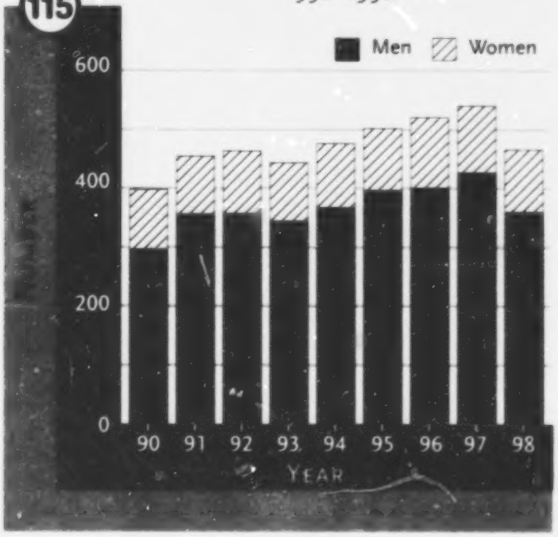
In 1998, 473 British Columbians took their own lives. The number and rate of suicide deaths has remained fairly constant since the mid-1980s, after declining in the 1970s.

People with serious mental illness are at high risk for suicide. In 1997/98, 39 per cent of suicides had a documented history of mental illness. This is known to be an under-estimate, because many cases of mental illness are not diagnosed or not recorded on the death certificate (B.C. Ministry of Health, Adult Mental Health Division, 2000).

Although men are more likely to die from suicide than women (Figure 115), women are more likely to contemplate and attempt suicide. According to the 1998 Adolescent Health Survey, 9 per cent of female students said they had attempted suicide in the past year, compared with 4 per cent of males (The McCreary Centre Society, 1999).

Figure
115

Suicides in British Columbia
1990-1998

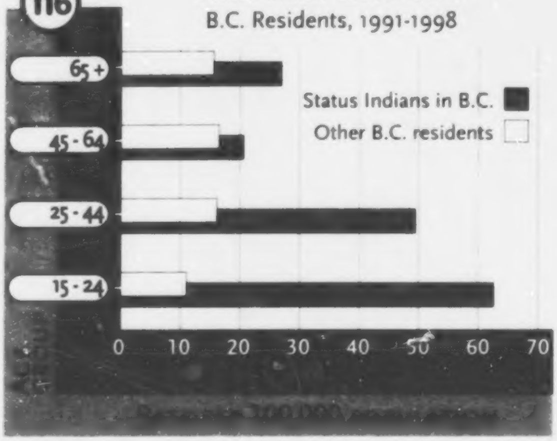


Source: B.C. Vital Statistics Agency, Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

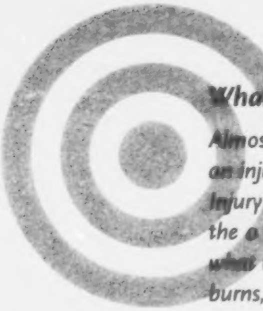
Suicide rates are two to three times higher among Status Indians than among other B.C. residents, for both men and women. The age profile also differs sharply. The average age of Status Indian suicide deaths is more than ten years younger than for the rest of the population. Among Status Indians, youth age 15-24 are the group most likely to commit suicide, while for the total population rates tend to increase slightly with age (Figure 116).

Figure 116 Suicide Rates by Age Group

Status Indian and All Other
B.C. Residents, 1991-1998



Source: B.C. Vital Statistics Agency, B.C. Ministry of Health. January 2000. Analysis of Health Statistics for Status Indians in British Columbia 1991-1998. Birth-Related and Mortality Summaries for British Columbia and Four Administrative Areas, Table 14 and Appendix 1.



What Targets Are Achievable?

Almost all injuries can be prevented, by understanding the circumstances that occur prior to an injury and developing ways to prevent them. In British Columbia, the Minister of Health's Injury Prevention Advisory Committee (1997) has set injury prevention goals and targets for the 0 to 24 age group. The Committee developed targets on the basis of past trends and what was thought to be achievable by the year 2001 in the areas of traffic injuries, fire and burns, drowning, workplace injuries, and home and residential injuries. In the coming year, the Committee aims to develop targets and strategies for sport and recreational injuries to children and youth.

At this time, there are no province-wide targets to reduce hip fractures or other injuries among older age groups. However, we know that a significant proportion of hip fractures can be prevented by addressing risk factors, which include problems with medication use, vision, mobility, calcium deficiency, physical inactivity, environmental hazards, and living alone.

At the national level, work is under way to develop a national injury prevention and control strategy. This will encompass both intentional and unintentional injuries for all age groups.

The problem of illicit drug use may never be entirely eliminated, but overdose deaths and other harms resulting from drug abuse can be greatly reduced. Experience in Switzerland, the Netherlands, and Germany has shown that overdose deaths can be prevented by providing a comprehensive program that reduces the supply and demand for drugs, while addressing the health and social problems that drug users face. In British Columbia, a working group with members from the health, social services, criminal justice, and law enforcement sectors has developed a discussion paper that outlines their collective best advice as to the outcomes we could achieve and the approach we should take to reduce the harms arising from drug use. Government is currently considering adoption of this drug strategy, along with a proposal to establish an ongoing expert committee to provide reports and advice in meeting the goals and objectives related to drug use.

The Convention on the Rights of the Child, a global charter ratified by Canada in 1991, requires that all children be protected from violence, abuse, neglect, maltreatment, and exploitation. It is difficult to set an achievable target for reported rates of child abuse, or even to identify an appropriate benchmark. Across Canada, each province or territory compiles its own statistics, using its own definitions, and results cannot be compared. Health Canada has undertaken a national study to examine the occurrence of child abuse and neglect. The final report is scheduled for completion in the year 2000. It is hoped that these research results will shed light on the frequency and circumstances surrounding child maltreatment, so that we are better able to protect children and to measure progress in this area.

Suicide rates are one of the outcome measures being used to assess performance of British Columbia's mental health system. If programs are successful, the number and proportion of suicides with untreated mental illness should decline. In terms of benchmarks, four B.C. regions (Richmond, North Shore, Burnaby, South Fraser Valley) have suicide rates between 8 and 10 per 100,000, significantly below the provincial average.

What Actions Can We Take?

Individuals and families can:

- Practice safe behaviours at home, at work, and at play. Use seat belts, infant car seats, bicycle helmets, and other safety equipment properly.
- Recognize the early signs of violence, abuse, mental illness, and suicide contemplation. Seek professional help if you are concerned about violent or abusive behaviour in yourself, a family member, or a friend.

Governments, health and social service agencies, and communities can:

- Continue to work on strategies identified in the provincial injury prevention plan for children and youth.
- Develop injury prevention plans at the community level. Encourage private and public organizations' involvement in injury prevention initiatives.
- Support effective strategies to reduce falls in community and institutional settings. Falls prevention should balance the issues of safety and independence.
- Develop a comprehensive plan for addiction services, with a focus on reducing the harms caused by alcohol and other drugs and on the management of concurrent problems such as mental illness.
- Continue to develop a coordinated response to the health and social problems faced by illicit drug users.
- Focus on the underlying factors that lead to suicide and violence, such as poverty, unemployment, feelings of alienation, substance abuse, and untreated mental illness.
- Create public support for zero tolerance for violence in all areas of society.
- Implement proven programs (home visiting, parenting programs, etc.) that support parents in doing a good job.

Appendix A
Acknowledgements

Many individuals contributed to the preparation of this year's Annual Report. The Advisory Committee on Health Goals for British Columbia assisted in defining the report's content and overall approach. The Advisory Committee and other reviewers provided comments and suggestions on drafts at various stages. Several individuals and organizations provided data and technical support. The Provincial Health Officer gratefully acknowledges all contributors for their support and assistance.

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Appendix C
Indicator Definitions

Indicators for Measuring Progress Toward British Columbia's Health Goals

HEALTH STATUS

WELL-BEING	GENERAL HEALTH	HEALTH CONDITIONS	DEATHS
- Self-rated health - Positive mental health	- Functional health - Acitvity limitation - Disability-days	- Overweight - Chronic conditions - Chronic pain - Mental health problems	- Infant mortality - Premature deaths (PYLL) - Life expectancy

GOAL ① LIVING AND WORKING CONDITIONS

EMPLOYMENT	INCOME	PARTICIPATION AND SOCIAL INTEGRATION	HOUSING AND COMMUNITY DESIGN
- Unemployment - Workplace injuries - Decision-latitude at work	- Low income - Income assistance - Income inequality	- Social support - Volunteering - Crime - Children & youth in care	- Housing need

GOAL ② INDIVIDUAL CAPACITIES, SKILLS, AND CHOICES

HEALTHY CHILD DEVELOPMENT	LEARNING OPPORTUNITIES	HEALTHY CHOICES	INDEPENDENT LIVING
- Low birthweight - Breastfeeding - Family functioning - School readiness	- High school graduation - Post-secondary graduation - Grade 12 exam completion	- Smoking - Regular heavy drinking - Physical activity - Bicycle helmet use - High-risk sexual practises - Teen pregnancy	- Living arrangements, age 65+

GOAL ③ PHYSICAL ENVIRONMENT

AIR	WATER	FOOD	LAND & SOIL	SUSTAINABILITY
- PM_{10} air pollution - Exposure to second-hand smoke	- Boil-water advisories - Water quality index	- Critical hazards in food premises - Food quality samples exceeding guidelines	- Blood lead levels in children	- Greenhouse gas emissions - Energy consumption - Land in protected areas

GOAL ④ HEALTH SERVICES

ACCESSIBILITY	DOING THE RIGHT THINGS RIGHT	[illegible]	IMPROVING HEALTH
- Childhood immunizations - Influenza immunizations - Screening mammography - Pap smears - Smoking cessation - Dental visits in past year - Unmet health needs care	- Opportunities for self-care - Use of protocols and guidelines - Breast-conserving surgery - Cesarean deliveries - Antibiotic prescribing - Preventable admissions	- May not require Hospitalization - Expected compared to actual stay - Alternate Level of Care days - Community follow-up after hospitalization	- Improved health behaviours - Deaths due to medically-treatable diseases

GOAL ⑤ ABORIGINAL HEALTH

HEALTH STATUS		FACTORS AFFECTING HEALTH	
- Self-rated health - Premature deaths(PYLL)	- Infant mortality - Life expectancy	- School completion - Low income	- Unemployment - Community control

GOAL ⑥ DISEASE AND INJURY PREVENTION

NON-COMMUNICABLE DISEASE	COMMUNICABLE DISEASE	INJURIES
- Heart disease and stroke deaths - Cancer incidence and deaths - Respiratory disease and deaths - Mental health hospitalizations - Neural tube defects	- Vaccine-preventable diseases - Tuberculosis - HIV infection - Sexually transmitted diseases - Food and waterborne diseases - Waterborne disease outbreaks	- Unintentional injuries - Hip fractures - Illicit drug deaths - Spousal assaults - Child abuse - Suicide

Health Status

Self-Rated Health

Definition: Proportion of the population age 12 and older who rate their own health status as "excellent".

Source: National Population Health Survey, Statistics Canada.

Rationale: People's perceptions of their own health provide an overall measure of well-being. A person's self-rated health is often quite similar to results obtained through other measures.

Positive Mental Health

(Happiness, Self-esteem, Mastery, Sense of Coherence)

Definition: Proportion of the population who have positive mental health, based on self-reported measure. Happiness is based on a question that asks respondents whether they are usually happy and interested in life. Self-esteem, mastery, and sense of coherence are based on standard scales for these measures. Cut-off points for a "high" level of self-esteem, mastery, and sense of coherence do not have an absolute meaning; however, they do allow for comparisons between population groups.

Source: National Population Health Survey, Statistics Canada.

Rationale: Happiness, self-esteem, mastery, and sense of coherence provide four ways to assess the population's level of mental health. Happiness is an overall measure of well-being and quality of life. Self-esteem refers to the general sense of self-worth as a person, while mastery measures the extent to which individuals feel their life chances are under their own control. Sense of coherence is a view of the world that events are comprehensible, challenges are manageable, and life is meaningful. Each of these attributes help people to enjoy life and to cope with life's stresses.

Functional Health

Definition: Proportion of the population reporting very good health, a score of 0.80-1.00 on the Comprehensive Health Status Measurement System, which measures eight dimensions of functioning: hearing, seeing, communicating, mobility, dexterity, pain, cognition, and emotion.

Source: National Population Health Survey, Statistics Canada.

Rationale: Functional health status provides a broad assessment of health. This measure, developed at McMaster University, is based on a series of questions about a person's ability to function in eight areas: hearing, seeing, speech, ability to get around, use of hands and fingers, memory and thinking, feelings, and pain and discomfort.

Activity Limitation

Definition: Proportion of the population who report having a disability or handicap or being limited in certain activities on a continuing basis because of a health problem.

Source: National Population Health Survey, Statistics Canada.

Rationale: Activity limitation gives us information about the effects that health problems are having on people's daily lives. Results are based on questions about whether individuals are limited on an ongoing basis because of a health problem. At the population level, a low rate may reflect success in preventing or treating diseases that cause disability. A low rate may also mean that health problems are having less of an impact on daily life due to differences in attitudes and/or environments. Wheel chair accessibility, for example, may lead to an improved level of independence and, thus, lower rates of activity limitation.

Disability-Days

(Two-Week Disability-Days)

Definition: Proportion of the population who stayed in bed or cut down on normal activities because of illness or injury, on one or more days in the past two weeks.

Source: National Population Health Survey, Statistics Canada.

Rationale: While activity limitation describes long-term health problems, two-week disability-days gives us a snapshot of health problems experienced within the previous 14 days. Like many health status indicators, two-week disability-days and other general measures do not change substantially from one year to the next. However, they are still useful indicators to monitor. As life expectancy continues to increase, measures such as two-week disability days, functional health, and activity limitation can help us to gauge whether those additional years of life are spent in good health.

Overweight

Definition: Proportion of the population age 20-64 who are overweight to the point of probable health risk (a Body Mass Index of 27.0 or greater).

Source: National Population Health Survey, Statistics Canada.

Rationale: Body Mass Index (BMI) is a common measure of weight-for-height and can indicate whether a person's weight may be unhealthy. People who are overweight are at greater risk of developing a wide range of health problems, particularly high blood pressure, diabetes, heart disease, and certain types of cancer. While overweight is not an official cause of death, some experts believe that it is one of the leading contributors to premature death in North America (Frazao, 1999).

Chronic Conditions

Definition: Proportion of the population age 12 and older who report that they have been diagnosed by a health professional as having a chronic condition such as diabetes, arthritis, asthma, or allergies.

Source: National Population Health Survey, Statistics Canada.

Rationale: The term "chronic conditions" covers a wide range of health problems that may last many years, and for which a complete cure may never be achieved. Chronic conditions can have a profound effects on a person's life, whether it be a child with a serious birth defect, a young adult with a spinal cord injury, or an older adult with arthritis. The proportion of the population who have a chronic condition is an indirect measure of quality of life. It also provides information about the number of people requiring treatment or support services.

Chronic Pain

Definition: Proportion of the population age 12 and older who answered "no" when asked if they were usually free of pain or discomfort. Severity of pain (mild, moderate, severe) and the degree of activity limitation are also measured.

Source: National Population Health Survey, Statistics Canada.

Rationale: Pain that persists for a long time can interfere with all aspects of a person's life - their home life, their ability to work and play, and their social relationships. This indicator attempts to quantify the extent and level of pain and suffering, and therefore, reduced quality of life, that the population is experiencing. It can also be used as an overall measure of success of the health care system, because many treatment services are directed at reducing pain and suffering.

Mental Health Problems

(Depression, Mental Health Distress, Distress Affects Life)

Definition: Depression: Proportion of the population who are probably or possibly depressed, based on their responses to a set of questions that establishes the probability of have suffered a major depressive episode in the previous 12 months.

Mental health distress: Proportion of the population who show symptoms of mental health distress, based on their responses to a set of questions about their feelings and experiences during the past month.

Distress affects life: Proportion of the population who say distress has "some" or "a lot" of affect on their life and activities.

Source: National Population Health Survey, Statistics Canada.

Rationale: These indicators provide information about the prevalence and impact of mental health problems and the need for prevention, early intervention, treatment, and support services. "Depression" is an estimate of the proportion of adults who would likely be rated as depressed if they were to have a more thorough clinical examination. "Mental health distress" estimates the proportion of adults who have experienced a recent episode of anxiety or depression. "Distress affects life" reflects the impact that mental health problems are having on people's daily lives and activities.

Infant Mortality

Definition: The number of infants who die in the first year of life, expressed as a rate per 1,000 live births.

Source: B.C. Vital Statistics Agency.

Rationale: The infant mortality rate - the number of babies who die in the first year of life, expressed as a rate per 1,000 live births - is a long-established measure, not only of child health, but also the social well-being of a society. A low rate reflects a healthy population, with good care and attention paid to the health of mothers and children.

Potential Years of Life Lost

Definition: Potential years of life lost (PYLL) for males and females, from all causes and selected preventable causes, expressed as an age-standardized rate per 1,000 standard population. PYLL is the number of years of life "lost" when a person dies before an established cut-off point, in this case age 75.

Source: B.C. Vital Statistics Agency.

Rationale: Potential Years of Life Lost (PYLL) focuses on premature deaths - deaths that occur in the younger age groups and that can, in theory, be prevented or postponed. PYLL is an overall indicator of population health, as well as the effectiveness of preventive programs. PYLL considers deaths before age 75 and weights them by age. A person dying at age 25, for example, has lost 50 years of life (75 minus 25 = 50 PYLL). To allow for meaningful comparisons, PYLL is expressed as an age-standardized rate per 1,000 population.

Life Expectancy

Definition: An estimate of the average number of years that a person born in that year is expected to live, based on current mortality rates, for males, females, and total.

Source: BC STATS, B.C. Ministry of Finance and Corporate Relations.

Rationale: Life expectancy is used around the world as a basic indicator of the extent to which people are able to live a long life, that a population is healthy, has adequate food and access to health care, and is protected from disease and other threats that would shorten their life span. Although life expectancy measures quantity rather that quality of life, it remains a widely-used summary measure of population health.

Goal 1: Living and Working Conditions

Unemployment Rate

Definition:	Proportion of the labour force who did not have a job during the reference period, for youth age 15-24 and for the total population age 15 and over.
Source:	Census, Statistics Canada.
Rationale:	The unemployment rate is a traditional measure of the health of the economy. It also indicates the social and economic status of groups within society. Unemployment is detrimental to health - of individuals, their families, and their communities. Not only does it mean reduced income, it can also mean a loss of self-esteem. Unemployed people experience more health problems, including depression, anxiety, disability-days, and hospitalizations than the employed.

Workplace Injuries

Definition:	The number of short-term workplace injury claims accepted by the Workers' Compensation Board, expressed as a rate per 100 person-years of WCB-covered employment.
Source:	Workers' Compensation Board of British Columbia.
Rationale:	Workers who are injured or become sick as a result of their work can suffer health effects, stress, and reduced incomes. Employee injuries are also a significant expense for employers, because of the time and costs arising from accident investigations, absenteeism, staff turnover, and lost productivity. The workplace injury rate is a key indicator of success in protecting workers from physical hazards.

Decision-Latitude at Work

Definition:	Proportion of workers age 15 and over who say they have a high degree of control over their work circumstances (who agree or strongly agree with the statement "I have a lot to say about what happens at my work").
Source:	National Population Health Survey, Statistics Canada.
Rationale:	In addition to physical safety, healthy workplaces provide an environment where workers are treated fairly and feel valued, and where they have variety and control over their work circumstances. Many international studies have found that people who are able to participate in decisions about their work are healthier and more productive. Adults spend about one-quarter of their lives at work. Decision-latitude provides one way to assess the quality of their working life.

Low Income Rate

Definition:	Proportion of persons with incomes below the Statistics Canada low-income cut-off (LICO) line, for selected age groups and family structures. The LICO line is calculated in relation to average expenditures on the essentials of food, clothing, and shelt. If an individual or family spends 20 percentage points more of its total income on these essentials than the average, then they fall below the LICO line. LICOs are set at income levels differentiated by family size and degree of urbanization; cut-offs are updated to compensate for changes in the Consumer Price Index. Low income rates may be calculated based on before-tax or after-tax income.
Source:	Survey of Consumer Finances (SCF) and the Survey of Labour and Income Dynamics (SLID), Statistics Canada.
Rationale:	An adequate income allows people to purchase housing, food, and other basic needs. A stable and adequate income also provides security and control over the decisions people make - factors that are among the most important influences on health. The Low Income Rate - the proportion of the population with incomes below the Statistics Canada low income cut-off - is a consistent and well-defined method that identifies those who are substantially worse off than the average. Low income cut-offs (LICOs) represent levels of income where people spend too much of their money for food, shelter, and clothing, based on their family size and where they live. Canada does not have an official "poverty line". However, health and social service organizations often refer to the Low Income Rate as the "poverty rate".

Income Assistance Rate

Definition:	Proportion of the population receiving BC Benefits, the provincial government program that provides financial assistance to individuals and families in need. Data do not include Aboriginal people living on-reserve.
Source:	B.C. Ministry of Social Development and Economic Security administrative files and BC STATS population estimates.
Rationale:	The income assistance rate tells us what proportion of the population is receiving government income assistance because they are in financial need. This provides an indication of the level of economic hardship that exists in population groups and communities throughout the province.

Income Inequality

Definition:	The income share of the bottom half (poorest) families. That is, the proportion of the population's household income that accrues to households earning less than the median income.
Source:	Census, Statistics Canada. Special tabulations.
Rationale:	International studies have shown that in more egalitarian societies, people tend to live longer and have better health. Large differences in income between the rich and the poor can lead to inequalities in health and other aspects of life. Income inequality is measured in various ways, some of which require complex and technical calculations. One of the simplest ways to measure the gap between the rich and the poor is to determine the income share of the wealthiest and/or the poorest income groups, in this case, the bottom half (poorest) families. In a situation of perfect equality, the bottom half of families would receive half (50 per cent) of the total income. Regions or groups with values closer to 50 per cent are more equal, while those with lower values are less equal in terms of their household income distribution.

Social Support

Definition:	Proportion of the population age 12 and older who report a high level of social support, based on their responses to four questions about having someone to confide in, someone they can count on in a crisis, someone they can count on for advice, and someone who makes them feel loved and cared for.
Source:	National Population Health Survey, Statistics Canada.
Rationale:	Friendship and social support networks - those people to whom we can turn, or who turn to us, for help, comfort, advice, and opinion - have a major influence on our health. Studies have repeatedly shown that the more friends and social support groups people have, the better the overall health of the group. Friendship and social support networks are an important factor in making people feel valued and in helping them to cope when problems arise.

Volunteer Rate

Definition:	Proportion of the population age 15 and older who report having participated in volunteer activities in the past year.
Source:	1997 National Survey of Giving, Volunteering, and Participating.
Rationale:	Voluntary work has been described as the glue that holds society together (Ross and Shillington, 1989). Through volunteering, friends, colleagues, and neighbours work together, and this sharing of a common concern fosters a sense of belonging and trust and contributes to a community's "social capital" - a factor that is linked to health. Voluntary activity can be performed through a structured organization. Volunteering may also be done on a more informal or temporary basis, such as helping a friend or neighbour in need.

Crime Rate

Definition:	The number of Criminal Code offences expressed as a rate per 1,000 population, for violent crimes, property crimes, other, and total. Violent crimes are "person offences" which include homicide, attempted murder, sexual and non-sexual assault, abduction, and robbery. The crime rate is based on the number of incidents reported to or by the police.
Source:	Uniform Crime Reporting Survey. B.C. Ministry of Attorney General, Police Services Division.
Rationale:	Violence, both real and perceived, is hazardous to health, individual quality of life, and community spirit. The crime rate - the number of Criminal Code offences per 1,000 population - is an indirect measure of the extent to which people are engaging in anti-social, violent, and illegal activity. It does not measure the exact extent of involvement in crime, because it is based only on the number of incidents reported to or by the police. Because of this and other limitations, the Ministry of Attorney General does not consider the crime rate to be a valid indicator of the relative safety of one region over another. However, the crime rate is often used by health and social agencies as a measure of the ways we treat one another and the overall level of safety and security within a community.

Children and Youth in Care

Definition:	The number of children who are in the care of child welfare authorities, as a proportion of the total child population age 0 to 18.
Source:	B.C. Ministry for Children and Families and BC STATS population estimates.
Rationale:	Most children live in families with one or both of their biological or adoptive parents. In cases where children and youth under 19 years of age are unable to live with their families, the Ministry for Children and Families provides substitute parenting. Children and youth come into the care of the Ministry for several reasons. Protection may be required due to abuse or neglect, parents may be absent or unable to care for their child, or the child may require special care of some type. A rising rate of children and youth in care may reflect increased awareness and reporting of child welfare concerns or changes in child welfare legislation. However, a growing rate of children in care may also indicate that more families are having difficulties caring for their children. Increases in family stress may be related to changes in the economy, patterns of employment and unemployment, or other social conditions.

Housing Need

Definition: Proportion of renter households that are unable to afford suitable and adequate housing, based on the Core Housing Need index developed by the Canadian Mortgage and Housing Corporation (CMHC).

Source: CMHC, using data from the Census, Statistics Canada.

Rationale: Core housing need is an index used nationally to measure the number of households in an area that cannot find housing which is adequate (in good repair and with full bathroom facilities) and suitable (uncrowded) without spending more than 30 per cent of their gross household income on rent. As a general rule, households are considered to have affordability problems if more than 30 per cent of household income is spent on housing costs. At that level of spending, it is likely that there won't be enough money for other necessities such as food, clothing, and transportation, and households will face difficult choices such as sacrificing food, working longer hours, or relying on food banks. These choices may lead to poor health.

Goal 2:
Individual Capacities, Skills, and Choices

Low Birthweight

Definition: Proportion of live births with a birthweight less than 2500 grams.

Source: B.C. Vital Statistics Agency.

Rationale: Babies born with a low birthweight (less than 2,500 grams) are more likely to die during the first year of life. They are also more likely have problems such as birth defects, illnesses and poor health throughout childhood, and learning difficulties. The low birthweight rate is a well-established indicator of child health. It also tells us about the health of women and their ability to achieve healthy pregnancies. An adequate income, early prenatal care, and assistance with smoking cessation can reduce the occurrence of low birthweight. A high rate of babies born with low birthweight may indicate that some women are not receiving optimal prenatal care, education, and support.

Breastfeeding

Definition: Proportion of infants age 3 months to 3 years who are currently breastfed or who were breastfed for at least three months.

Source: National Longitudinal Survey of Children and Youth, Human Resources Development Canada and Statistics Canada.

Rationale: Breast milk is the ideal food for a baby's growth and development. Breast milk contains the optimal mix of nutrients, gives babies increased resistance to infections and fewer allergies, and provides opportunities for mother-infant bonding. The Ministry of Health and other authorities have adopted the World Health Organization recommendation that breast milk be the only source of nutrients for most infants in the first four to six months of life. The breastfeeding rate measures our success in helping mothers to provide the best nutrition their babies can have.

Family Functioning

Definition: Proportion of children living in "healthy functioning" families, as determined by a series of questions about how well the family works together.

Source: National Longitudinal Survey of Children and Youth, Human Resources Development Canada and Statistics Canada.

Rationale: The family environment is the most important single influence on a child's health and well-being - an influence that lasts a lifetime. Families that are functioning well, where parents and children have positive interactions, with stability and consistency in the home, and other aspects of quality parenting help children develop a sense of identity and problem-solving skills. Children who do not receive these protective factors often have more difficulty coping with life's challenges. "Family functioning" tells us about the quality and well-being of family environments. Results are based on a series of questions about how well the family works together in problem solving, communication, roles, emotional responsiveness, emotional involvement, and behaviour control.

School Readiness

Definition: Proportion of children who are "ready for school", based on two assessments: the Peabody Picture Vocabulary Test, which measures verbal ability of four and five-year olds and a set of questions that measure emotional and behavioural readiness. In the Peabody Picture Vocabulary Test, children with scores between 85 and 115 are considered to be in the normal range. Those with scores of 116 or more are advanced, while those scoring less than 85 are delayed. Behavioural readiness is assessed through a set of 43 questions that ask about children's aggression, anxiety, conduct, and social problems.

Source: National Longitudinal Survey of Children and Youth, Human Resources Development Canada and Statistics Canada.

Rationale: Research shows what children who have been introduced to the basics and have a positive attitude toward learning will do better in school over the long term. Children who are not "ready for school" - intellectually or socially - may not be able to take full advantage of educational opportunities. There are different components to school readiness, and ways to measure it are still being developed, but experts believe school readiness is one of the most important indicators of children's well-being. Used at the population level, school readiness is one outcome of the environments that families, communities, and society as a whole are providing for young children. School readiness tells us about the quality of the resources available to children, including the family's income, parents' time and parenting practices, and community resources such as non-parental child care and family support programs. If children in some neighbourhoods or population groups consistently receive low school readiness scores, it means that these groups of children are not receiving the stimulation and interactions they need for optimal development.

High School Graduation
Post-Secondary Graduation

Definition: Proportion of the population age 25-54 who have a high school graduation certificate or higher and the proportion who have a post-secondary certificate, diploma, or degree of some type, based on the Census questions about educational attainment.

Source: Census, Statistics Canada.

Rationale: Educational attainment - the highest level of schooling that people achieve - is closely linked to their social and employment status, income, and health. Graduation from high school is one level of attainment that is commonly used as a measure of success, because high school completion represents a stepping stone to post-secondary education and to the world of work. Finishing a post-secondary program is another important level of achievement, because it enables students to master specific skills and knowledge and helps them to pursue their chosen career path. The level of educational attainment reflects the overall quality of the home and community learning environments, as well as the quality of the education system.

Grade 12 Exam Completion Rate

Definition: Proportion of students enrolled in Grade 12 who took and passed the provincial examinations for English 12 and Mathematics 12.

Source: B.C. Ministry of Education.

Rationale: Provincial examinations measure student learning in designated Grade 12 courses. English 12 and Mathematics 12 are key subject areas, because these courses are often core or preferred admissions requirements to post-secondary programs. The provincial exam completion rate is the number who took and passed the Grade 12 provincial exam, as a proportion of students enrolled in Grade 12. Information about exam results helps in monitoring and improving learning in literacy, mathematics, and other provincially-examinable subject areas.

Smoking

Definition: Proportion of the population who are current smokers. Current smokers are those who smoke cigarettes on either a daily or an occasional basis. Note: "Tobacco use" is a broader term that includes those who use alternate forms of tobacco. To allow comparison with national and international surveys, the definition here is limited to current smokers.

Source: Tobacco Use in B.C. 1997, Heart and Stroke Foundation of B.C. and Yukon.

Rationale: Smoking is thought to be the single most important preventable cause of illness and death. The proportion of the population who smoke is a key measure of the success of policies and programs to reduce tobacco use.

Regular Heavy Drinking

Definition: Proportion of current alcohol drinkers age 12 and over who report having had five or more drinks on one occasion, 12 or more times in the previous year.

Source: National Population Health Survey, Statistics Canada.

Rationale: When used safely, alcohol can be an enjoyable part of the lives of many people without demonstrable harm. This is in contrast to tobacco, for which there is not a recognized safe level. But alcohol has the capacity to harm if not used in a safe and moderate fashion. Too much or inappropriate use of alcohol can lead to a range of health, work, family, and social problems. The birth defects and developmental problems that result from fetal alcohol syndrome, the traffic injuries and deaths resulting from driving while impaired, and the incidents of violence that are alcohol-related - all of these are preventable. The level of regular heavy drinking indicates the number of people who are likely to be problem drinkers, putting themselves and others at risk for alcohol-related problems.

Physical Activity

Definition: Proportion of the population age 12 and over who are physically active, based on their responses to questions about the frequency, duration, and intensity of their participation in leisure-time physical activity.

Source: National Population Health Survey, Statistics Canada.

Rationale: Physical activity has many health benefits. An adequate level of regular, vigorous physical activity helps to prevent serious illnesses and conditions, including heart disease, obesity, high blood pressure, adult-onset diabetes, osteoporosis, and depression. Physical activity also improves self-esteem, reduces stress, and provides opportunities for relaxation and socialization. In terms of its impact on population health, improving the number of British Columbians who are physically active is as important as reducing smoking. The proportion of the population who are physically active tells us how we are doing in promoting this healthy behaviour.

Healthy Eating

Definition: To be developed as data become available.

Rationale: Healthy eating is one of the most important actions we can take to keep healthy and to prevent serious illnesses. Studies suggest that improved diets and eating patterns could reduce heart disease by at least 20 per cent, and cancer and diabetes by at least 30 per cent (Frazao, 1999). Osteoporosis, high blood pressure, overweight, anemia, and birth defects are other conditions that can be diet-related. These illnesses and the burden of suffering they cause could be reduced significantly through healthy eating, which includes simple actions such as eating a variety of foods, increasing one's consumption of fruits, vegetables, and grain products, decreasing the amount of fat in the diet, maintaining a healthy body weight, and limiting salt, alcohol, and caffeine. In spite of its important connection to health, little data exist on the actual dietary intake of British Columbians. To address this data gap, a major nutrition survey took place in 1999. Carried out and jointly funded by the B.C. Ministry of Health and Health Canada, this survey collected information about the nutritional status and dietary practices of adults in British Columbia. Results, which are expected to be available in about two years, will provide detailed information about this important topic.

Bicycle Helmet Use

Definition: Proportion of bicycle riders who say they "always" wear a helmet when riding a bike.

Source: National Population Health Survey, Statistics Canada.

Rationale: Safety equipment prevents several types of injuries. Seat belts and infant car seats, bicycle and motorcycle helmets, personal flotation devices, smoke detectors, and child-proof container lids on medications are some examples of highly effective safety equipment. In recent years, British Columbia has been actively promoting the use of bicycle helmets, because helmets, if consistently and properly used, can prevent or reduce the severity of head injuries. Legislation requiring the use of bicycle helmets came into effect in British Columbia in September 1996, and community initiatives have been undertaken to raise awareness of helmets and other bicycle safety issues. Before legislation was introduced, more than 2,000 cyclists were involved in accidents with motor vehicles each year. Head injuries were the cause of most bicycle-related deaths, and accounted for more than half of the bicycle-related injuries. The rate of helmet usage is a measure of success in encouraging bicycle riders to adopt this safety behaviour.

High-Risk Sexual Practices

Definition: Proportion of the population who have sexual behaviours that can lead to serious conditions such as sexually transmitted diseases, HIV infection, infertility, and unintended pregnancy. High-risk sexual practices include having multiple sexual partners, having sex without a condom (in a short-term relationship), and not using an effective method of contraception.

Source: National Population Health Survey, Statistics Canada.

Adolescent Health Survey, The McCreary Centre Society.

Rationale: The ability to have a responsible, satisfying, and safe sex life is a basic requirement for reproductive health (World Health Organization, 1994). Safe sexual practices are important, because risky behaviours can have serious results, including unintended pregnancy, sexually transmitted diseases, and HIV infection. Responsible decision-making, condom use, and use of contraception are promoted through sexuality education and awareness programs in schools and other settings. The proportion of the population who have high-risk sexual practices helps us to gauge the effectiveness of these reproductive health programs.

Teen Pregnancy

Definition: The estimated number of pregnancies per 1,000 teenage women. The estimate is based on the number of pregnancies resulting in a live birth, stillbirth, induced abortion (ICD-9 635, 636, 638) performed in a hospital or in a clinic, or hospitalization due to miscarriage (ICD-9 630-634, 637). Multiple birth events (i.e., twins, triplets) are only counted as one pregnancy.

Source: Hospital Morbidity Database and B.C. Vital Statistics Agency.

Rationale: Deciding if, when, and how often to become pregnant is an important aspect of reproductive health. An unintended pregnancy exposes the parents and the child to a number of risks - physical, psychological, and/or social. Early teenage childbearing is of particular concern, because it can affect a young woman's development and life opportunities. Studies have shown that teen pregnancies can be reduced substantially if comprehensive sexuality education begins in the primary grades and if contraceptive services are available to adolescents. The teen pregnancy rate provides indirect information about the effectiveness of sexuality education and access to contraceptive services and products, as it is assumed that most pregnancies among teen women, particularly those under age 18, are unintended. Teen pregnancy is also commonly used as an indicator of social and economic conditions in a community; poverty, emotional deprivation, school failure, and lack of hope for the future are important factors in explaining teen pregnancy.

Living Arrangements, Age 65 and Older

Definition: Proportion of seniors age 65 and older who are living in the community (living alone or in families) versus living in collective dwellings (hospitals, care facilities, or other institutions).

Source: Census, Statistics Canada.

Rationale: A sense of control over one's own life, ability to participate in daily social life, and the ways in which one is treated by others are major influences on health. Census data on the living arrangements of older citizens provide some facts about one aspect of independence - the independence that comes from remaining in the community.

Goal 3:
Physical Environment

PM_{10} Air Pollution

Definition: Per cent of time that fine particulate (PM10) levels exceed 25 micrograms per cubic metre, the level above which adverse health effects can occur. Data are based on measurements taken at sampling stations at more than 50 locations throughout the province. Monitoring sites are often in communities where air quality is a concern; therefore, data do not necessarily reflect the average air quality in British Columbia.

Airborne particles are divided into classes according to size. Particulate Matter 10 (PM_{10}), the size traditionally measured, refers to particles 10 micrometres or less (about one-eighth the width of a human hair). Recent research has shown than even smaller particles - 2.5 micrometres or less, called $PM_{2.5}$ - pose the greatest health risk. In the future, we will be able to report on levels of PM2.5, as data become available.

Source: Air Resources Branch, B.C. Ministry of Environment, Lands and Parks.

Rationale: From a public health perspective, the most important outdoor air pollutants in British Columbia are small airborne particles - dust, dirt, soot, smoke, or droplets that are released into the air from factories, power plants, cars, fires, or other sources. These tiny particles can be inhaled into the lungs, leading to various health effects that range from cough and asthma attacks to cancer and premature death from respiratory disease. Scientific evidence shows that negative health effects start to appear when PM_{10} concentrations are greater than 25 micrograms per cubic metre. The amount of time that PM_{10} exceeds 25 micrograms per cubic metres can help in developing and evaluating actions to reduce air emissions to levels that protect human health.

Exposure to Second-Hand Smoke

Definition:	Proportion of non-smokers (age 12 and older) who have daily or nearly-daily exposure to second-hand smoke at home, at work or school, or in other public settings. Proportion of households with children age 11 years and under where there is daily or nearly-daily exposure to second-hand smoke.
Source:	Tobacco Use in B.C. 1997, Heart and Stroke Foundation of B.C. and Yukon.
Rationale:	Second-hand smoke is a dangerous toxin to which no one should be exposed against their wishes - whether at work, in public places, or in people's homes. While second-hand smoke is dangerous for people of all ages, it can be particularly harmful to children's lungs, with short-term and long-term health effects. Babies born to mothers who smoke during pregnancy have lower birth weights and a greater risk of Sudden Infant Death Syndrome (SIDS) than those mothers who do not smoke. Second-hand smoke can cause respiratory infections such as bronchitis and pneumonia, ear infections, and can increase the frequency and severity of asthma. Furthermore, children who see their parents and other role models smoking are more likely to take up smoking themselves, putting themselves at risk of lung cancer and other health problems later in life. The proportion of the population exposed to second-hand smoke measures the success of policies and programs to reduce exposure by making public places smoke-free, encouraging parents to maintain smoke-free homes, and reducing the use of tobacco.

Boil-Water Advisories

Definition:	The number of boil-water advisories in place at a given point in time. Boil-water advisories are used to notify the public that water is unsafe for human consumption because of microbiological contamination.
Source:	B.C. Ministry of Health, Public Health Protection Branch.
Rationale:	Clean drinking water is a basic requirement for health. When water is unsafe for human consumption because of microbiological contamination, public health authorities issue an advisory to boil the water before drinking it. Trends in the number of boil-water advisories provides one indication as to whether the safety of drinking water supplies is improving or deteriorating.

Water Quality Index

Definition:	A composite index that measures the degree to which the various water uses are protected, in monitored water bodies.
Source:	Water Management Branch, B.C. Ministry of Environment, Lands, and Parks.
Rationale:	Water has many uses. Humans use water for drinking, recreation, irrigation, and livestock watering. Other species - aquatic life and wildlife - use water, too. The Ministry of Environment, Lands and Parks has developed a Water Quality Index that measures the degree to which these various water uses are protected. The Index is based on attainment of water quality objectives for safe levels of contaminants and water conditions. If monitoring shows that all objectives are usually met everywhere in a water body, all the time, then the Index will be close to zero, indicating excellent water quality. Water bodies are selected for monitoring if they receive industrial, municipal, or agricultural discharges, and so could be polluted. Although only a small proportion of British Columbia's streams, rivers and lakes, aquifers, and marine areas are monitored, the Water Quality Index gives an indication of how well we are doing in protecting our water resources and in balancing the interests of all users. Water quality is considered to be an indicator of ecosystem vitality, much the same as blood pressure is for humans.

Critical Hazards in Food Premises

Definition:	The number of critical hazards identified during inspections of food facilities, expressed as a rate per 100 inspected premises. Critical hazards are health hazards that require immediate attention. Food premises include restaurants and other establishments that serve meals to the public, food stores, and other facilities as defined by Food Premises Regulations.
Source:	B.C. Ministry of Health, Public Health Protection Branch.
Rationale:	Food and restaurant safety is considered so important to the health of the public that it is enshrined in legislation, primarily the Health Act, which, together with regulations and codes of practice, determines performance standards. Inspection of restaurants and other food establishments is one of the ways to ensure that high standards are maintained. Regular inspections help to identify unhealthy conditions or practices that, if not corrected, could lead to the spread of disease.

In British Columbia, local health authorities are responsible for inspecting several types of food premises, including restaurants, catering services, fast food outlets, hospitals and care facilities, food stores, and other food premises such as slaughterhouses and food manufacturing plants. When food facilities are inspected, unsafe conditions called "hazards" are noted. Critical hazards are those health hazards that require immediate attention, such as inadequate refrigeration, improper cleaning of equipment, or problems with food handler hygiene. The number, rate, and type of critical hazards found provide information about the effectiveness of inspections, as well as programs to train and educate food handlers and their employers. If programs are successful, the number of critical hazards will be small, and all identified hazards will be corrected promptly.

Food Quality Samples Exceeding Guidelines

Definition: Proportion of food samples for cooked ready-to-eat foods that exceed one or more guidelines for bacteria and sanitary quality. Samples are taken when environmental health officers suspect a problem, so this measure does not estimate risk in the total food supply.

Source: B.C. Centre for Disease Control Society, Provincial Laboratory.

Rationale: Food testing is a well-established means of assessing contamination in the food supply. British Columbia has a food testing program that uses a "direct food analysis" approach. Environmental Health Officers collect food samples, which are submitted to the Provincial Laboratory for testing. Samples are analyzed to determine whether they comply with guidelines for bacteria and sanitary quality. Because Environmental Health Officers take samples when they suspect a problem, the results do not estimate risk in total food supply. However, the number and type of foods exceeding guidelines provides information about food safety problems and the need for additional standards, education, or enforcement.

Blood Lead Levels in Children

Definition: Average blood lead levels in children age 6 months to 60 months and the percentage of children with levels above the Trail Lead Program "level of concern" (15 ug/dL or higher). Average blood lead levels are age and area-adjusted.

Source: Trail Lead Program.

Rationale: High blood lead levels used to be among the most common childhood conditions. When the causes and health impacts were recognized, major efforts were made to decrease the levels of lead in gasoline, paint, industrial emissions, and products intended for use by children. As a result, the risk to children's health from lead is now much lower than in the past. However, some children do have elevated blood levels. Lead in the home (such as paint or plaster in older homes) and industrial pollution are the major remaining sources. In the area surrounding the city of Trail, lead in the soil and house dust have been issues. Young children are most affected by lead, because of their habit of putting toys and fingers into their mouths. Trends in average blood lead levels for Trail children show the effectiveness of community efforts and smelter emission reductions in reducing this exposure.

Greenhouse Gas Emissions

Definition: Total greenhouse gas emissions in megatonnes of carbon dioxide equivalents.

Source: Environment Canada.

Rationale: Elevated levels of greenhouse gases cause changes to global climate, which may lead to increases in air pollution, expanding populations of pest species and vector-borne diseases, and impaired food production due to floods, droughts, and windstorms. In 1997,Canada participated in the development of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. When ratified, this will commit Canada to reduce greenhouse gas emissions to 6 per cent below 1990 levels, some time between the years 2008 and 2012. British Columbia is participating in a national program to achieve this target across Canada.

Total and Alternative Energy Consumption

Definition: Total energy consumed and energy consumed that was generated from alternative sources, in petajoules. Alternative sources are those that do not deplete natural resources or endanger the environment. Biomass, solar, wind, micro-hydro and fuel cells are examples.

Source: Energy Statistics Handbook and CANSIM (The Canadian Socio-economic Information Database produced by Statistics Canada).

Rationale: The consumption of conventional energy pollutes the atmosphere, depletes natural resources, and compromises the ability of future generations to use those natural resources. These impacts can be minimized by reducing overall consumption, by using energy more efficiently, and by developing alternative energy sources that are less stressful on the environment. This indicator measures success in promoting more energy conservation and the development of alternative energy technologies.

Land in Protected Areas

Definition: Areas protected, as a per cent of British Columbia's land base. In British Columbia, protected areas include national parks, ecological reserves, class A and C parks, recreation areas, and protected areas that fall under the Environment and Land Use Act.

Source: B.C. Land Use Coordination Office and B.C. Parks.

Rationale: Protected areas are an important means of protecting biological and cultural diversity, protecting recreational resources and habitats, and providing for basic life-support functions such as absorbing waste and carbon dioxide. British Columbia has adopted the international target to have 12 per cent of its land base in protected status. This indicator measures success in meeting that commitment.

Goal 4:
Health Services

Childhood Immunizations

Definition: Proportion of children who, by their second birthday, have been fully immunized against diphtheria, pertussis, tetanus, polio, Haemophilus influenzae type b (Hib), measles, mumps, and rubella, according to the provincial immunization schedule. Rates are based on a one-month sample of children who are two years old in April of a given year and for whom child health records (HLTH 182) are available.

Source: Public Health and Preventive Division, B.C. Ministry of Health.

Rationale: This indicator measures coverage or "uptake" rates for childhood immunization programs, compared to national and provincial targets. Routine immunizations for children are among the most cost-effective of all health interventions. Low rates indicate a problem in access to or delivery of this highly effective preventive health service.

Influenza Immunization

Definition: Estimated proportion of (1) the population age 65 and over and (2) residents and staff of care facilities who receive a dose of influenza vaccine during a given year ("flu season").

Source: Population age 65 and over: Epidemiology Services, B.C. Centre for Disease Control Society and BC STATS population estimates.

Residents and staff of care facilities: Annual influenza and pneumococcal survey, Preventive Health Services, B.C. Ministry of Health.

Rationale: Influenza is a major cause of illness, hospitalization, and death among the elderly and among people with certain medical conditions. Annual influenza vaccination prevents influenza-like illness and lessens the severity of disease when it does occur. At least half of the deaths, hospitalizations, and physician visits for influenza can be prevented with full implementation of the recommended immunization program. Annual influenza immunization is recommended for all adults age 65 and older, persons with chronic diseases in all age groups, and health care workers. Influenza immunization programs should generally aim to vaccinate 90 per cent of eligible recipients. Low immunization rates indicate a problem in access to this effective preventive service.

Screening Mammography

Definition: Proportion of women age 50-74 who attended the Screening Mammography Program of B.C. at least once in the past two years.

Source: Screening Mammography Program of B.C. and BC STATS population estimates.

Rationale: Screening mammography is an important strategy for early detection of breast cancer. Screening centres are the ideal way to identify and recruit women, because dedicated centres provide a standardized approach, quality control, and appropriate follow-up at the lowest unit cost. International studies have shown that screening mammography reduces breast cancer death rates by 25 per cent or more if women age 50-69 are screened every two years. The Screening Mammography Program of B.C. has extended the age group to 50-79, as program data show that women age 70-79 may also benefit from screening. Because regular attendance by 70 per cent of women is needed before a screening program will have optimal effect on death rates, the Screening Mammography Program has a long-term target to screen 70 per cent of women age 50-74 every two years. Screening rates measure the extent to which mammography screening programs are reaching their target group. Low rates indicate that some women are experiencing problems accessing this service.

Pap Smears

Definition: Proportion of women age 20-69 who have had a Pap test within the last 20 months.

Source: Cervical Cancer Screening Program, B.C. Cancer Agency and BC STATS population estimates.

Rationale: Pap tests detect pre-malignant lesions before cancer of the cervix develops, allowing time for treatment that avoids progressive, fatal disease. Canadian and U.S. guidelines recommend screening women age 20-69 every three years, once several normal yearly smears have been obtained. Pap smear rates measure the extent to which cervical cancer screening programs are reaching the target population. Low rates indicate that some women are experiencing problems accessing this service.

Smoking Cessation Services

Definition: Proportion of family physicians who actively counsel their patients to stop smoking, as evidenced by their participation in the BC Doctors' Stop-Smoking Program.

Source: BC Doctors' Stop-Smoking Program.

Rationale: Intervention by physicians can be a cost-effective means of helping people quit smoking (de Guia, Levesque, Pickett, Ferrence, & McDonald, 2000; U.S. Department of Health and Human Services, 1996). When physicians routinely check to determine if their patients smoke, offer advice, counselling, or nicotine replacement, and provide long-term follow-up, a significant number of smokers (10 to 15 per cent) will quit. Because most people visit a family physician regularly, family physicians are well placed to reach smokers. By offering training, supplies, and consultation, the BC Doctors' Stop-Smoking Program mobilizes physicians to offer their patients systematic, effective tobacco intervention. The proportion of family physicians actively participating in the program provides information about the availability of cessation services. It is also one way to measure physicians' involvement in clinical preventive care.

Dental Visits in Past Year

Definition: Proportion of the population age 12 and over who report visiting a dentist in the past year.

Source: National Population Health Survey, Statistics Canada.

Rationale: Dental caries (tooth decay) is among the most common diseases known. Yet, most dental disease is preventable. Regular dental visits are an important part of dental health care. The proportion of the population who visit a dentist regularly provides an indication of access to this preventive service. Groups with low visit rates may be experiencing financial, geographic, or cultural barriers to dental care.

Unmet Health Care Needs

Definition: Proportion of the population age 12 and over who say they had at least one unmet health-care need during the previous year, i.e., they required care or advice on at least one occasion but did not receive it.

Source: National Population Health Survey, Statistics Canada.

Rationale: This measure describes people's perceptions of their unmet needs for care. Because accessibility is one of the fundamental principles of Canada's health care system, it is assumed that most people will be able to have their care needs met. A high rate of unmet needs, or large differences by income or other characteristics, could indicate that some groups are facing financial, geographic, or other barriers in accessing health services.

Opportunities for Self-Care

Definition: (1) General practitioner office visits for Time-Limited Acute Symptoms (TLAS), expressed as a rate per 1,000 population (age-standardized). TLAS are common illnesses and symptoms such as colds, influenza, back ache, headache, and skin rashes, that are considered appropriate for self or home care. Conditions and diagnostic codes are based on a list provided by the Department of Public Health and Preventative Medicine of the Oregon Health Sciences University.

(2) Emergency room visits for non-urgent conditions, expressed as a rate per 1,000 population (age-standardized). These are physician services billed as Level 1 Emergency Care - emergency room visits that require only an abbreviated history, examination, and treatment and thus could be considered non-urgent. Rates can be calculated for all Level 1 visits, or for a subset of visits such as those for Time-Limited Acute Symptoms (TLAS).

Source: Medical Services Plan, Professional Support Branch.

Rationale: Individuals and families are the front-line providers of health care. Families and other caregivers usually decide on first-line treatment (such as over-the-counter remedies) and when to seek medical attention. As our understanding of health advances, it is important this front line of caregivers is educated about appropriate care. Doctors' office visits for common illnesses and non-urgent emergency room visits are two ways to measure opportunities for improving self-care. Not all of these visits could be avoided through self-care. However, results can be used to identify opportunities to educate the community about appropriate treatment of common diseases or to improve access to care in settings that are less intensive than the emergency room.

Use of Protocols and Guidelines

Definition: Estimated reductions in medical services usage and expenditures that occur due to the adoption of protocols and guidelines. Estimates are based on the difference between actual utilization and projected utilization of fee items for which protocols and guidelines have been adopted by the Guidelines and Protocols Steering Committee. Protocols and guidelines cover a range of medical services such as routine pre-operative testing, prenatal ultrasound, urinalysis, and ankle x-ray.

Source: Medical Services Plan.

Rationale: Protocols and clinical practice guidelines, particularly when combined with education and positive feedback, have been shown to improve both the quality and outcomes of health care. In British Columbia, protocols and guidelines are developed through the Guidelines and Protocols Advisory Committee, which include representatives from the B.C. Medical Association and the Medical Services Plan. This indicator looks at the estimated changes in services provided that occur once protocols and guidelines are in place. The primary purpose of protocols and guidelines is to improve the quality of health care. However, reduced expenditure is an additional benefit, because any cost savings can be re-directed to other needed health care services.

Breast-Conserving Surgery

Definition: Proportion of female breast cancer surgery patients (ICD-9 diagnosis code of 174, acute, rehab, and day surgery levels of care) who receive breast-conserving surgery (CCP procedure code of 97.11, 97.21, 97.22, 97.27, or 97.28 and no procedure code indicating breast ablative surgery - 97.12, 97.14, 97.16, 97.18).

Source: Hospital Morbidity Database.

Rationale: Breast-conserving surgery (lumpectomy), followed by radiation treatment, is the recommended procedure for most women with early breast cancer (The Steering Committee on Clinical Practice Guidelines for the Care and Treatment of Breast Cancer, 1998). Because breast-conserving surgery is less traumatic, physically and psychologically, it is considered the preferable option. A low rate of breast-conserving surgery suggests that some women may not be receiving the preferred, least invasive option. Variations in rates may be due to a number of factors including patient preferences, access to radiation treatment, and differences in physicians' patterns of practice.

Cesarean Deliveries

Definition: Proportion of births that are delivered by cesarean section.

Source: B.C. Vital Statistics Agency.

Rationale: In some cases, cesarean sections are essential for the health of a mother or baby. However, cesarean deliveries are a major surgical procedure, and they should not be done unnecessarily. Various guidelines exist defining appropriate indications for surgery. A review of research evidence by the World Health Organization suggested no clear health benefits from cesarean delivery rates above 10 to 15 per cent. Rates significantly above this level suggest that some women may be receiving surgeries that are not medically necessary.

Antibiotic Prescribing

Definition: Proportion of children age 0-14 diagnosed with otitis media (ICD-9 381-382) who received a prescription for antibiotics after visiting a general practitioner and, of those who received a prescription, the proportion who received the first-line antibiotic recommended in the anti-infective guidelines.

Source: Medical Services Plan and PharmaNet.

Rationale: Otitis media (middle ear infection) is one of the most common problems of infancy and early childhood and accounts for about 10 per cent of children's visits to their family doctor. Most (about 80 per cent) ear infections will get better on their own, whether treated with antibiotics of not. The proportion of children who receive a prescription for antibiotics and the antibiotic prescribed provides information about compliance with antibiotic prescribing guidelines. A high rate indicates that some children may be receiving unnecessary or inappropriate drug treatments. In the longer term, too much use of antibiotics can lead to organisms that are resistant to first-line treatment.

Preventable Admissions

Definition: Hospitalizations for "ambulatory care sensitive conditions", conditions where hospital admission is usually not needed, if patients have timely access to high quality care in the community. Conditions are based on the list used by Alberta Health: primary diagnosis of ICD-9 or ICD-9-CM code 250 (diabetes), 300 (neurosis), 291-292 and 303-305 (alcohol-drug related) , 311 (depression), 401-405 (hypertension), and 493 (asthma). Hospitalizations are expressed as a rate per 1,000 population (age-standardized).

Source: Hospital Morbidity Database.

Rationale: Diabetes, hypertension, asthma, depression, and other long-term conditions can usually be managed in the community, without the need for hospitalization. While not all admissions for these conditions are preventable, it is assumed that appropriate prior care could prevent a significant proportion. A disproportionately high rate is presumed to reflect problems in access to disease prevention and/or primary care services.

May Not Require Hospitalization

Definition:	Hospitalizations classified as "May Not Require Hospitalization" (MNRH), expressed as a rate per 1,000 population (age-standardized) and as a proportion of all acute care inpatient hospitalizations. MNRH is a classification developed by the Canadian Institute for Health Information. MNRH is used to describe cases in which the combination of diagnosis, procedure, and age usually mean that care could have been provided properly without the need for admission as a hospital inpatient. Examples are tonsillectomies, sprains and strains, hernia procedures without complications, and sore throat.
Source:	Hospital Morbidity Database.
Rationale:	May Not Require Hospitalization identifies groups of patients who may have been admitted unnecessarily to hospital. These patients needed medical services, but not necessarily a hospital bed. A high rate of MNRH cases suggests the need to review in-patient cases to identify opportunities for providing more care in an out-patient setting.

Expected Compared to Actual Stay

Definition:	Average days that acute care patients spend in hospital, compared to their Expected Length of Stay (ELOS). Expected Length of Stay depends on the patient's diagnosis, their age, and whether they have complications that make their care more complex.
Source:	Hospital Morbidity Database.
Rationale:	This indicator measures the amount of time patients spend in hospital, compared to what would be expected based on their particular condition. Hospitals or regions that consistently have shorter lengths of stay are considered to be more efficient, provided patients remain healthy after they are discharged.

Alternate Level of Care Days

Definition:	The number of days that Alternate Level of Care patients spend in acute care hospitals, as a proportion of all inpatient hospital-days. Alternate Level of Care patients are those who no longer require acute care or who are assessed or to be assessed for eligibility in extended care or intermediate care, but who remain in an acute care hospital pending transfer to a suitable facility.
Source:	Hospital Morbidity Database.
Rationale:	This indicator is designed to assess whether patients are being placed in the most appropriate care setting. If many patients occupying acute care beds could be cared for elsewhere, this suggests problems with the availability of other types of care or difficulties with the placement process.

Community Follow-up after Hospitalization

Definition:	Proportion of persons hospitalized for a mental health diagnosis who receive at least one contact with a community mental health centre or a fee-for-service psychiatrist or general practitioner within 30 days of discharge. Hospitalizations are based on in-patient separations (all levels of care) for patients age 15 to 64 with a primary diagnosis of ICD-9 290-314, V61 or V62.
Source:	Hospital Morbidity Database. Client/Patient Information Management (CPIM) LAN Database. MSP Claims Database.
Rationale:	Most people who are hospitalized for psychiatric reasons require follow-up services once they are discharged from hospital. To maintain continuity of care and to prevent re-admission to hospital, most individuals should have at least one out-patient contact within 30 days of discharge. The proportion who have community follow-up within this time frame is a measure of the mental health system's responsiveness and continuity of care. A high rate of community follow-up indicates that hospital and community services are well coordinated and that community services are available and accessible.

Improved Health Behaviours in Program Clients

Definition:	Proportion of clients who abstained (or reduced their use of) tobacco, alcohol, and other drugs after entering the Pregnancy Outreach Program.
Source:	Pregnancy Outreach Program statistics, B.C. Ministry for Children and Families.
Rationale:	Pregnancy Outreach Programs provide education, counselling, food supplements, and support to pregnant women at risk of having a low birthweight baby or other poor pregnancy outcome. If programs are successful, participants will be able to reduce their use of tobacco, alcohol, and other drugs - behaviours that have a direct impact on the birthweight and health of a newborn.

Deaths due to Medically-Treatable Diseases

Definition:	Deaths due to medically-treatable diseases according to Charlton's definition, which is based on mortality, in specific age groups, that could potentially be avoided through appropriate medical attention. Causes of death include hypertensive disease (age 5-64), cervical cancer (age 5-64), pneumonia and unspecified bronchitis (age 5-49), tuberculosis (age 5-64), asthma (age 5-49), chronic rheumatic heart disease (age 5-44), acute respiratory infections and influenza (age 5-49), bacterial infections (age 5-64), Hodgkin's disease (age 5-34), abdominal hernias, cholecystitis, and appendicitis (age 5-64), and deficiency anemias (age 5-64).
Source:	B.C. Vital Statistics Agency.
Rationale:	This indicator measures the effectiveness of the health care system in avoiding deaths that could have been prevented with appropriate medical management. If the health system is successful, the number of deaths due to medically-treatable diseases will be very low, approaching zero.

Goal 5: Aboriginal Health

Self-Rated Health

Definition: Proportion of adults age 15 and older who identify with an Aboriginal group who rate their own health status as "excellent".

Source: Post Censal Survey, Statistics Canada.

Rationale: People's perceptions of their own health provide an overall measure of well-being. In fact, a person's self-rated health is often quite similar to results obtained through other measures.

Infant Mortality

Definition: The number of infants who die in the first year of life, expressed as a rate per 1,000 live births, for Status Indian infants compared to infants in the total B.C. population.

Source: B.C. Vital Statistics Agency.

Rationale: The infant mortality rate - the number of babies who die in the first year of life, expressed as a rate per 1,000 live births - is a long-established measure, not only of child health, but also the social well-being of a society. A low rate reflects a healthy population, with good care and attention paid to the health of mothers and children. The Status Indian infant mortality rate has improved dramatically over the past 40 years, but it remains about double the provincial rate. Sudden Infant Death Syndrome (SIDS) is the major contributor to higher death rates among Status Indian infants.

Age Standardized Mortality Rate

Definition: The number of deaths due to all causes and specific causes, expressed as a rate per 10,000 population (age-standardized), for the Status Indian population compared to other B.C. residents.

Source: B.C. Vital Statistics Agency.

Rationale: Measures long-term success in reducing deaths, compared to general population. Although the gap between Status Indians and other B.C. residents is narrowing, Status Indians have mortality rates that are significantly higher, on almost all causes of death.

Premature Death (Potential Years of Life Lost)

Definition: Potential years of life lost (PYLL), expressed as an age-standardized rate per 1,000 standard population. PYLL is the number of years of life "lost" when a person dies before an established cut-off point, in this case age 75.

Source: B.C. Vital Statistics Agency.

Rationale: Potential Years of Life Lost (PYLL) focuses on premature deaths - deaths that occur in the younger age groups and that can, in theory, be prevented or postponed. PYLL is an overall indicator of population health, as well as the effectiveness of preventive programs. PYLL considers deaths before age 75 and weights them by age. A person dying at age 25, for example, has lost 50 years of life (75 minus 25 = 50 PYLL). To allow for meaningful comparisons, PYLL is expressed as an age-standardized rate per 1,000 population. Status Indians in B.C. have a PYLL rate that is about three times that of other B.C. residents. Injury deaths are a major contributor to the higher PYLL rate among Status Indians.

Life Expectancy

Definition: An estimate of the average number of years that a person born in that year is expected to live, based on current mortality rates, for Status Indian males, females, and total compared to the total B.C. population.

Source: B.C. Vital Statistics Agency.

Rationale: Life expectancy is used around the world as a basic indicator of the extent to which people are able to live a long life, that a population is healthy, has adequate food and access to health care, and is protected from disease and other threats that would shorten their life span. Although life expectancy measures quantity rather that quality of life, it remains a widely-used summary measure of population health. On average, Status Indians in British Columbia live 10 years less than other B.C. residents. The gap between Status Indians and the general population is greater for males (10.6 years) than for females (8.9 years).

High School Completion

Definition: Proportion of the population age 15 and older who have a high school graduation certificate or higher, based on the Census questions about educational attainment, for the Aboriginal population on-reserve, off-reserve, and total, compared to the non-Aboriginal B.C. population.

Source: Census Dimension Series - Profile of Aboriginal Population in Canada, Statistics Canada.

Rationale: Educational attainment - the highest level of schooling that people achieve - is closely linked to their social and employment status, income, and health. Graduation from high school is one level of attainment that is commonly used as a measure of success, because high school completion represents a stepping stone to post-secondary education and to the world of work. In general, Aboriginal students are less likely to complete high school than are non-Aboriginal students.

Unemployment Rate

Definition: Proportion of the labour force age 15 and older who did not have a job during the reference period, for the Aboriginal population on-reserve, off-reserve, and total, compared to the non-Aboriginal B.C. population.

Source: Census Dimension Series - Profile of Aboriginal Population in Canada, Statistics Canada.

Rationale: The unemployment rate is a traditional measure of the health of the economy. It also indicates the social and economic status of groups within society. Unemployment is detrimental to health - of individuals, their families, and their communities. Not only does it mean reduced income, it can also mean a loss of self-esteem. Unemployed people experience more health problems, including depression, anxiety, disability-days, and hospitalizations than the employed. Traditionally, Aboriginal people have faced disadvantages in employment, including high unemployment, occupational segregation, pay inequities, and limited opportunities for career progression.

Low Income Rate

Definition: Proportion of the Aboriginal population age 15 and older with total income below $10,000, on-reserve, off-reserve, and total, compared to the non-Aboriginal B.C. population.

Source: Census Dimension Series - Profile of Aboriginal Population in Canada, Statistics Canada.

Rationale: There is a close relationship between income and health. An adequate income is important for health and conversely, low income is associated with poor health. Data are not readily available on the proportion of the Aboriginal population with incomes below the low income cut-off (see Low Income Rate, Goal 1). However, statistics are available on the proportion with total income below $10,000.

Community Control

Definition: Proportion of Aboriginal communities that have taken steps towards achieving community self-governance, as measured by factors such as engagement in treaty negotiations and control over local health and social services (health care, education, child protection services).

Source: B.C. Treaty Commission.

Health Canada, Medical Services Branch.

B.C. Ministry of Education.

B.C. Ministry for Children and Families.

Rationale: Individuals and communities are healthier when they are empowered and have a sense of control over their lives and their destinies. In recent years, the importance of preserving cultural identity and involving Aboriginal communities in control of community services has been recognized. The proportion of communities that are working towards self-governance reflects progress in supporting Aboriginal people to achieve self-determination and a collective sense of control.

Goal 6:
Disease and Injury Prevention

Heart Disease and Stroke Deaths

Definition: The number of deaths from ischemic heart disease (ICD-9 410-414), stroke (ICD-9 430-438), other circulatory system diseases, and total (ICD-9 390-459), expressed as a rate per 100,000 population (age-standardized).

Source: B.C. Vital Statistics Agency.

Rationale: Circulatory diseases, which include ischemic heart disease and stroke, are largely preventable. Even small reductions in the major risk factors (smoking, high blood pressure, and high blood cholesterol) can lower a population's death rate. Death rates measure long-term success in reducing deaths due to circulatory diseases compared to other regions, provinces, and countries. Lower death rates indicate success in disease prevention, early detection, and treatment.

Cancer Incidence and Deaths

Definition: The number of new cases and deaths from cancer, for all cancers (ICD-9 140-208) and for specific sites including lung (ICD-9 162), breast (ICD-9 174), cervix (ICD-9 180), and malignant melanoma (ICD-9 172), expressed as a rate per 100,000 population (age- standardized).

Source: B.C. Cancer Agency and B.C. Vital Statistics Agency.

Rationale: Some forms of cancer are preventable. For others, deaths can be reduced through screening and early detection. Cancer incidence and death rates measure long-term success in cancer control, compared to other regions, provinces, and countries. Lower rates indicate success in cancer prevention, detection, and treatment.

Respiratory Disease Deaths

Definition: The number of deaths from respiratory disease, for pneumonia (ICD-9 480-487), chronic lung disease (ICD-9 491-492, 496), other respiratory diseases, and total (ICD-9 460-519), expressed as a rate per 100,000 population (age-standardized).

Source: B.C. Vital Statistics Agency.

Rationale: This indicator measures long-term success in reducing deaths due to respiratory disease, compared to other regions, provinces, and countries. Lower death rates indicate success in respiratory disease prevention, detection, and treatment. Preventive actions include reducing tobacco use, avoiding exposure to tobacco smoke and other environmental risks, and use of influenza and pneumococcal vaccines.

Mental Health Hospitalizations

Definition: The number of hospital admissions due to mental disorders (ICD-9 290-319, principal diagnosis, acute care), expressed as a rate per 1,000 population, and average length of stay in hospital.

Source: Hospital Morbidity Database.

Rationale: Hospital usage provides one measure of the impact of mental illness - on individuals and on the health care system. Early identification, effective treatment, and community supports can reduce the need for acute care hospitalization. High admission rates and long lengths of stay can flag opportunities for improvement in community care for persons with mental illness. The mental health hospitalization rate also provides an estimate of the rate at which severe mental illness is occurring in the population. It is assumed that most persons hospitalized or institutionalized for a mental disorder fall into the serious category.

Neural Tube Defects

Definition: The number of neural tube defect cases (ICD-9 740.0-740.2, 741, 742.0) reported to the Health Status Registry, expressed as a rate per 1,000 total births (live births and stillbirths).

Source: B.C. Vital Statistics Agency, Health Status Registry.

Rationale: Neural tube defect are serious birth defects of the brain and spinal cord, which occur in approximately one of every 1,000 births. Research suggests that at least 50 per cent of neural tube defects can be prevented, if women consume sufficient amounts of folic acid prior to conception and during the early weeks of pregnancy. The rate of neural tube defects reflects the success of actions to increase folic acid consumption through diet, supplementation, or fortification of foods during processing. The rate of neural tube defects is also considered to be an overall indicator of the health of a population. During periods of famine, war, economic depression, and limited access to prenatal care, the rate of neural tube defects goes up. Conversely, during periods of prosperity, the rate of neural tube defects goes down.

Vaccine-Preventable Diseases

Definition: The number of cases of vaccine-preventable diseases reported to health authorities in a given year, expressed as a rate per 100,000 population. Diseases include diphtheria, haemophilus influenzae type b (Hib), hepatitis B, measles, mumps, pertussis, rubella, tetanus, pneumococcal disease, hepatitis A, cholera, meningococcal disease, cholera, rabies, typhoid, and yellow fever. Influenza is also vaccine-preventable, but influenza is monitored through a surveillance network that involves selected physicians, the Provincial Laboratory, and reports about high levels of influenza-like illness in care facilities and schools.

Source: Epidemiology Services, B.C. Centre for Disease Control Society.

Rationale: Of the several hundred communicable diseases that exist in the world today, at least 20 can be prevented to some extent through immunization. The number and rate of cases measures the success of immunization and other efforts to prevent and control these diseases.

Tuberculosis

Definition: The number of active cases of tuberculosis (new active and reactivated) reported in a given time period, expressed as a rate per 100,000 population.

Source: Tuberculosis Control, B.C. Centre for Disease Control Society.

Rationale: Tuberculosis is a serious but treatable disease that continues to be a health problem among high-risk groups, which include Aboriginal people and immigrants from countries where tuberculosis is common. The number and rate of new cases measures progress in tuberculosis control. It also reflects a community's socioeconomic status and general health status.

HIV Infection

Definition: The number of persons who tested HIV-positive for the first time in a given year, expressed as a rate per 100,000 population. Information is based on those who are tested for HIV and whose positive tests have been reported to the B.C. Centre for Disease Control Society. Data do not represent the total number of people who are infected with HIV during a given time period; the degree of under-reporting varies by age group, region, and risk category.

Source: STD/AIDS Control, B.C. Centre for Disease Control Society.

Rationale: This indicator provides an estimate of the rate at which HIV infection is occurring in the population. It measures the results of efforts to control the spread of HIV and prevent outbreaks; strategies include prevention programs aimed at high-risk communities, access to early testing, improved access to antiretroviral treatments, and actions to address the underlying factors that place people at increased risk of HIV infection. The incidence of HIV also provides an estimate of the future burden of illness and death due to AIDS.

Sexually Transmitted Diseases

Definition:	The number of new cases of chlamydia, gonorrhea, and infectious syphilis reported to health authorities in a given year, expressed as a rate per 100,000 population.
Source:	STD/AIDS Control, B.C. Centre for Disease Control Society.
Rationale:	Chlamydia, gonorrhea, and syphilis are the three major sexually transmitted diseases that are reportable to local and national health agencies. These diseases can be controlled - perhaps even eliminated - through screening of high-risk groups, prompt and complete treatment, and efforts to identify and treat sexual partners of infected persons. The rate at which new cases occur reflects, in part, the success of programs to prevent and control these diseases. High rates may also reflect increases in the level of testing.

Foodborne and Waterborne Diseases

Definition:	The number of reported cases, physician office visits, and hospitalizations due to intestinal infectious diseases, expressed as a rate per 10,000 population. For reported cases, diseases include amoebiasis, botulism, brucellosis, campylobacteriosis, cholera, cryptosporidiosis, E. coli, giardiasis, hepatitis A, listeriosis, paratyphoid, salmonellosis, shigellosis, trichinosis, typhoid, and yersiniosis. Office visits and hospitalizations are based on cases with a diagnosis of intestinal infectious diseases (ICD-9 001-009).
Sources:	Reported cases: Epidemiology Services, B.C. Centre for Disease Control Society. Physician office visits: Medical Services Plan billings. Hospitalizations: Hospital separations, for acute and rehabilitation levels of care, from the Hospital Morbidity Database.
Rationale:	These measures provide an estimate of the occurrence of enteric (intestinal) diseases, many of which are caused by consuming contaminated food or water, and the burden of those diseases on the health care system. Rates based on reported cases are known to be an under-estimate, as many cases of intestinal illness are not recognized or reported. However, rates can be used to raise awareness of the problem of food and waterborne disease and the importance of protecting food and water supplies through activities such as water treatment, watershed management, and promotion of safe food handling and storage practices.

Waterborne Disease Outbreaks

Definition:	The number of waterborne disease outbreaks that occur in a given year. An outbreak is an incident where two or more persons experience a similar illness after consumption of water intended for drinking, epidemiologic evidence indicates water as the source of illness, and/or in the opinion of the Medical Health Officer a waterborne disease outbreak is occurring.
Source:	Public Health Protection Branch, B.C. Ministry of Health.
Rationale:	The number of waterborne disease outbreaks is a measure of success in protecting the quality of British Columbia's drinking water. Water systems and watersheds must be carefully managed in order to reduce the risk of contamination. A target of zero waterborne disease outbreaks is a goal towards which to aim, but this many not always be achievable, even with careful management of water supplies. There are usually one or two recognized waterborne disease outbreaks in British Columbia each year

Unintentional Injuries

Definition:	The number of hospitalizations and deaths due to unintentional injuries, children and youth (age 0-24) and all ages, expressed as a rate per 100,000 (age-standardized). The term unintentional ("accidental") includes injuries due to causes such as motor vehicle collisions, falls, drowning, burns, and poisoning.
Source:	Hospital Morbidity Database and B.C. Vital Statistics Agency.
Rationale:	Injury rates provide information about the safety of the environments in which people live, work and play, the safety of the products they use, and risk-taking behaviour, especially among youth. Hospitalization and death rates measure long-term success in reducing unintentional injuries, compared to provincial goals and targets. Results reflect the adequacy and effectiveness of injury prevention efforts, including public education, product development and use, community and road design, and prevention and treatment resources.

Hip Fractures

Definition:	The number of hospitalizations for fracture of the hip (primary diagnosis of ICD-9 820.0-820.3, 820.8, 820.9), expressed as a rate per 1,000 population age 65 and older.
Source:	Hospital Morbidity Database.
Rationale:	Falls are a major problem among the elderly. As well as causing disability or death, hip fractures resulting from falls can have a major impact on independence and quality of life. There is no ongoing system to collect information about the falls that people experience. Hip fracture hospitalizations, for which data are readily available, provide one indication of the rate at which serious falls are occurring. Because osteoporosis is a major cause of fractures, hip fracture hospitalizations are sometimes used to provide a measure of the impact of this disease.

Illicit Drug Deaths

Definition: The number of deaths due to illicit drug overdose, as determined by the B.C. Coroners Service, expressed as a rate per 100,000 population age 15-64.

Source: B.C. Coroners Service.

Rationale: For the past decade, British Columbia has had an epidemic of deaths and disease related to injection drug use. Deaths and other harms associated with injection drug use can be greatly reduced through comprehensive and coordinated harm reduction strategies. The number and rate of illicit drug deaths provides one indication of the success of efforts to address this health and social issue.

Child Abuse

Definition: The number of confirmed reports of abuse or neglect (as defined under the Child, Family and Community Service Act), expressed as a rate per 1,000 population age 0 to 18. Data refer to child protection complaints that result in a section 16 investigation and a finding by the worker, in consultation with the supervisor, that the child is in need of protection. Such a finding does not necessarily result in admission to care, as other protective services may be more suitable.

Source: B.C. Ministry for Children and Families and BC STATS population estimates.

Rationale: Abuse or neglect by a parent or other caregiver presents a serious threat to a child's health. In the short term, abuse or neglect can result in physical harm or even death. Abuse can also lead to developmental or behavioural problems, or to mistreatment of the child's own children in later life. This indicator suggests the extent to which children's security is threatened rather than protected by the adults on whom they are most dependent. Data are based on the number of complaints reported and confirmed. Although there is a requirement to report all cases of suspected abuse, some cases are not reported.

Spousal Assault

Definition: The number of Criminal Code incidents (e.g., assault, homicide, criminal harassment) that contain supplementary information indicating that a crime occurred against a spouse, expressed as a rate per 1,000 population. Spouse is defined as a marital partner, a common-law partner, or a partner in a dating or intimate relationship and includes partners in same-sex relationships.

Source: B.C. Ministry of Attorney General, Police Services Division.

Rationale: Spousal assault rates provide an indication of the level of violence that is occurring in spousal relationships. It measures violence against women in particular, as most assaults involve a male offender and a female victim. This indicator can help emphasize the criminality of violence and the importance of taking measures to ensure that individuals who may be at risk are protected.

Suicide

Definition: The number of suicide deaths, expressed as a rate per 100,000 population (age-standardized).

Source: B.C. Vital Statistics Agency.

Rationale: This indicator measures long-term success in reducing suicide, a social as well as a major public health concern. Suicide rates can be reduced by focussing on the underlying social causes, developing coping skills, treating mental illness, and reducing the availability of guns and other means of suicide. It has been estimated that for every completed suicide, 10 to 100 suicides are attempted. Suicide rates may fluctuate from year to year, so multi-year periods should be examined.

Appendix D
Health Region Data

Where data permit, this Appendix provides indicator data for 20 geographic regions, for the most recent year available. A map showing the names and boundaries of the regions may be found in Appendix E.

For most of the indicators in this Appendix, more detailed statistics can be obtained from the web site of the Ministry of Health's Health Data Warehouse. The Warehouse is available to health stakeholders in British Columbia. This includes Ministry of Health and related staff in local health authorities and in the Ministry for Children and Families. If you have not previously accessed the Health Data Warehouse, please follow the registration steps below.

Using a web browser such as Netscape or Internet Explorer:

Step 1: Register at the Health Matters web site http://admin.moh.hnet.bc.ca

Step 2: Register at the Health Data Warehouse page http://admin.moh.hnet.bc.ca/hdw

Confirmation of the access request will be returned by e-mail. For further information, please contact
Data Access, B.C. Ministry of Health,
telephone (250) 952-3179.

Heath Indicators
Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil.	Thompson	**Fraser Valley**	**South Fraser**	**Simon Fraser**	Coast Garibaldi	Central Vancouver Island	Upper Island	**Cariboo**	**North West**	**Peace Liard**	**Northern Interior**	Vancouver	Burnaby	North Shore	Richmond	**Capital**	British Columbia	**Best Rate**	**Worst Rate**
Health Status																							
1 Infant Mortality																							
Infant deaths 1994-1998	26	28	26	51	33	76	193	99	19	71	40	26	41	19	56	166	56	30	40	70	1,167		
Rate per 1,000 live births	6.6	7.4	4.6	4.7	4.6	4.8	5.1	5.0	4.5	5.9	6.0	5.6	6.2	3.8	6.4	5.5	5.5	3.4	4.8	4.4	5.2	3.4	7.4
2 Potential Years of Life Lost																							
Men	63.4	85.6	78.3	63.8	89.7	73.8	60.6	65.2	78.7	79.8	79.6	87.7	87.6	70.1	83.9	94.9	64.6	51.0	47.5	63.5	72.6	47.5	94.9
Women	36.1	43.1	44.0	34.5	44.1	42.5	37.3	38.9	41.6	44.8	44.7	55.8	45.0	43.2	47.9	38.9	33.7	28.8	28.2	36.5	39.0	28.2	55.8
Sexes combined	50.0	64.8	61.2	48.9	67.2	58.3	49.0	52.0	61.0	62.4	62.6	72.2	67.5	57.3	66.7	67.2	49.1	39.7	37.6	49.8	55.9	37.6	72.2
3 Life expectancy (years)																							
Men	76.7	75.1	76.2	77.2	74.3	75.7	76.9	75.7	75.8	75.5	75.7	74.1	74.7	75.3	74.2	74.7	76.4	78.3	78.7	77.1	76.5	78.7	74.1
Women	82.1	81.3	81.5	83.0	80.7	81.1	81.8	81.1	81.5	81.1	80.2	79.9	80.3	80.4	79.8	82.2	82.1	82.4	83.6	81.8	82.0	83.6	79.8
Sexes combined	79.3	78.1	78.8	80.0	77.4	78.3	79.4	78.4	78.5	78.3	77.8	76.8	77.3	77.6	76.8	78.4	79.3	80.5	81.3	79.6	79.2	81.3	76.8
Living & Working Conditions																							
4 Unemployment rate, 1996																							
Age 15 and over	11.6%	11.1%	11.6%	10.1%	12.2%	10.1%	8.8%	7.8%	8.5%	11.5%	11.3%	13.4%	13.8%	9.4%	12.0%	9.7%	9.0%	5.6%	7.8%	7.7%	9.6%	5.6%	13.8%
Age 15-24	18.6%	17.9%	16.3%	17.2%	20.4%	14.7%	14.9%	14.0%	14.2%	18.4%	20.5%	18.6%	21.9%	14.2%	17.9%	15.7%	14.3%	11.8%	13.3%	14.3%	15.9%	11.8%	21.9%
5 Low income rate, 1996																							
Total population	15.2%	17.1%	16.8%	17.1%	17.2%	16.8%	17.9%	19.2%	14.4%	17.4%	15.2%	15.6%	12.8%	13.7%	14.2%	31.0%	27.8%	15.7%	26.0%	15.4%	19.6%	12.8%	31.0%
Population age 65+	12.1%	13.2%	13.5%	12.4%	14.4%	13.9%	19.4%	23.8%	9.0%	9.7%	10.5%	12.5%	13.8%	14.8%	15.6%	31.6%	29.1%	18.2%	27.1%	11.0%	18.1%	9.0%	31.6%
All children under 18	19.3%	20.4%	20.0%	21.0%	20.2%	20.9%	21.7%	21.6%	17.4%	23.1%	18.5%	18.0%	14.7%	16.3%	16.6%	35.8%	33.4%	17.5%	30.4%	17.5%	22.5%	14.7%	35.8%
In female lone-parent families	61.9%	56.9%	58.0%	59.1%	60.5%	65.5%	61.0%	58.6%	52.3%	63.1%	53.7%	54.4%	51.5%	52.9%	55.6%	64.8%	60.4%	44.1%	52.7%	49.6%	58.5%	44.1%	65.5%
6 Income assistance, 1999 % of population age 0-64																							
IA < one year	2.6%	3.3%	3.3%	3.0%	3.7%	2.8%	1.9%	1.9%	2.4%	3.8%	3.6%	3.4%	3.6%	3.2%	3.8%	2.1%	2.1%	1.0%	1.1%	2.4%	2.5%	1.0%	3.8%
IA ≥ one year	2.6%	4.2%	3.7%	3.3%	4.5%	4.4%	3.4%	2.9%	3.1%	5.6%	4.4%	4.0%	4.0%	2.3%	4.1%	4.7%	3.5%	1.3%	1.6%	3.4%	3.7%	1.3%	5.6%
Total	5.2%	7.5%	7.0%	6.3%	8.2%	7.2%	5.4%	4.8%	5.4%	9.4%	8.0%	7.4%	7.6%	5.5%	8.0%	6.8%	5.6%	2.3%	2.6%	5.8%	6.1%	2.3%	9.4%
% seniors receiving max GIS	2.8%	3.2%	2.8%	1.9%	3.6%	3.1%	3.8%	3.7%	2.4%	2.1%	2.5%	6.2%	4.9%	6.1%	4.8%	8.2%	5.4%	2.4%	5.1%	1.7%	3.7%	1.7%	8.2%
7 Income equality, 1996 Income share:																							
Bottom 50% of families	22.8%	21.9%	22.6%	22.9%	22.2%	23.4%	23.8%	23.3%	22.3%	22.7%	23.2%	22.4%	23.9%	24.0%	24.1%	18.2%	20.9%	19.9%	22.6%	22.6%	22.1%	24.1%	18.2%
8 Crime rate, 1996-1998																							
Serious violent crime	1.8	1.5	1.4	2.0	2.8	2.6	2.8	3.0	1.9	2.3	2.0	2.7	3.1	3.2	4.3	7.9	4.0	1.6	1.8	3.1	3.4	1.4	7.9
Break and enter	11.3	8.6	14.0	14.6	14.8	18.8	17.8	16.8	17.4	15.9	15.4	13.0	13.1	15.3	20.0	33.2	23.9	12.0	14.4	11.2	18.2	8.6	33.2
Total serious crime	13.1	10.1	15.4	16.7	17.6	21.4	20.6	19.8	19.3	18.2	17.5	15.7	16.3	18.5	24.4	41.1	28.0	13.7	16.2	14.3	21.6	10.1	41.1
9 Children in care, 1998/99																							
Number	238	158	333	749	495	738	1027	441	150	835	359	352	452	247	557	1325	358	192	163	772	9,937		
As % of population 0-18	1.1%	0.8%	1.1%	1.4%	1.4%	1.1%	0.7%	0.6%	0.8%	1.4%	1.1%	1.6%	1.6%	1.2%	1.4%	1.3%	0.9%	0.5%	0.4%	1.1%	1.0%	0.4%	1.6%
10 Housing affordability, 1996																							
Housing >30% of income	43.2%	48.6%	50.3%	50.4%	50.0%	49.0%	47.4%	45.2%	45.8%	53.8%	43.8%	40.5%	32.6%	29.3%	42.8%	47.3%	44.7%	44.5%	41.5%	48.2%	46.6%	29.3%	53.8%
Individual Capacities, Skills & Choices																							
11 Low birthweight births																							
Total number, 1994-1998	155	185	243	584	386	785	2,104	1,003	209	583	327	242	314	200	441	1,742	585	378	418	740	11,646		
As % of live births	3.9%	4.9%	4.3%	5.4%	5.3%	4.9%	5.6%	5.1%	4.9%	4.8%	4.9%	5.2%	4.7%	4.0%	5.0%	5.7%	5.7%	4.3%	5.0%	4.7%	5.1%	3.9%	5.7%
12 High school graduation																							
Percent of population 25-54	74.7%	76.9%	72.7%	75.5%	73.1%	71.9%	76.3%	80.3%	77.3%	73.7%	73.7%	65.9%	67.7%	66.4%	69.2%	80.6%	80.8%	89.5%	81.1%	83.0%	77.4%	89.5%	65.9%

Heath Indicators
Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
Health Status																							
1 Infant Mortality																							
Infant deaths 1994-1998	26	28	26	51	33	76	193	99	19	71	40	26	41	19	56	166	56	30	40	70	1,167		
Rate per 1,000 live births	6.6	7.4	4.6	4.7	4.6	4.8	5.1	5.0	4.5	5.9	6.0	5.6	6.2	3.8	6.4	5.5	5.5	3.4	4.8	4.4	5.2	3.4	7.4
2 Potential Years of Life Lost																							
Men	63.4	85.6	78.3	63.8	89.7	73.8	60.6	65.2	78.7	79.8	79.6	87.7	87.6	70.1	83.9	94.9	64.6	51.0	47.5	63.5	72.6	47.5	94.9
Women	36.1	43.1	44.0	34.5	44.1	42.5	37.3	38.9	41.6	44.8	44.7	55.8	45.0	43.2	47.9	38.9	33.7	28.8	28.2	36.5	39.0	28.2	55.8
Sexes combined	50.0	64.8	61.2	48.9	67.2	58.3	49.0	52.0	61.0	62.4	62.6	72.2	67.5	57.3	66.7	67.2	49.1	39.7	37.6	49.8	55.9	37.6	72.2
3 Life expectancy (years)																							
Men	76.7	75.1	76.2	77.2	74.3	75.7	76.9	75.7	75.8	75.5	75.7	74.1	74.7	75.3	74.2	74.7	76.4	78.3	78.7	77.1	76.5	78.7	74.1
Women	82.1	81.3	81.5	83.0	80.7	81.1	81.8	81.1	81.5	81.1	80.2	79.9	80.3	80.4	79.8	82.2	82.1	82.4	83.6	81.8	82.0	83.6	79.8
Sexes combined	79.3	78.1	78.8	80.0	77.4	78.3	79.4	78.4	78.5	78.3	77.8	76.8	77.3	77.6	76.8	78.4	79.3	80.5	81.3	79.6	79.2	81.3	76.8
Living & Working Conditions																							
4 Unemployment rate, 1996																							
Age 15 and over	11.6%	11.1%	11.6%	10.1%	12.2%	10.1%	8.8%	7.8%	8.5%	11.5%	11.3%	13.4%	13.8%	9.4%	12.0%	9.7%	9.0%	5.6%	7.8%	7.7%	9.6%	5.6%	13.8%
Age 15-24	18.0%	17.9%	16.5%	17.2%	20.4%	14.7%	14.9%	14.0%	14.2%	18.4%	20.5%	18.6%	21.9%	14.2%	17.9%	15.7%	14.3%	11.8%	13.3%	14.3%	15.9%	11.8%	21.9%
5 Low income rate, 1996																							
Total population	15.2%	17.1%	16.8%	17.1%	17.2%	16.8%	17.9%	19.2%	14.4%	17.4%	15.2%	15.6%	12.8%	13.7%	14.2%	31.0%	27.8%	15.7%	26.0%	15.4%	19.6%	12.8%	31.0%
Population age 65+	12.1%	13.2%	13.5%	12.4%	14.4%	13.9%	19.4%	23.8%	9.0%	9.7%	10.5%	12.5%	13.8%	14.8%	15.6%	31.6%	29.1%	18.2%	27.1%	11.0%	18.1%	9.0%	31.6%
All children under 18	19.3%	20.4%	20.0%	21.9%	20.2%	20.9%	21.7%	21.6%	17.4%	23.1%	18.5%	18.0%	14.7%	16.3%	16.6%	35.8%	33.4%	17.5%	30.4%	17.5%	22.5%	14.7%	35.8%
In female lone-parent families	61.5%	56.9%	58.0%	59.1%	60.5%	65.5%	61.0%	58.6%	52.3%	63.1%	53.7%	54.4%	51.5%	52.9%	55.6%	64.8%	60.4%	44.1%	52.7%	49.6%	58.5%	44.1%	65.5%
6 Income assistance, 1999																							
% of population age 0-64																							
IA < one year	2.0%	3.3%	3.3%	3.0%	3.7%	2.8%	1.9%	1.9%	2.4%	3.8%	3.6%	3.4%	3.6%	3.2%	3.8%	2.1%	2.1%	1.0%	1.1%	2.4%	2.5%	1.0%	3.8%
IA ≥ one year	2.0%	4.2%	3.7%	3.3%	4.5%	4.4%	3.4%	2.9%	3.1%	5.6%	4.4%	4.0%	4.0%	2.3%	4.1%	4.7%	3.5%	1.3%	1.6%	3.4%	3.7%	1.3%	5.6%
Total	5.2%	7.5%	7.0%	6.3%	8.2%	7.2%	5.4%	4.8%	5.4%	9.4%	8.0%	7.4%	7.6%	5.5%	8.0%	6.8%	5.6%	2.3%	2.6%	5.8%	6.1%	2.3%	9.4%
% seniors receiving max GIS	2.8%	3.2%	2.8%	1.9%	3.6%	3.1%	3.8%	3.7%	2.4%	2.1%	2.5%	6.2%	4.9%	6.1%	4.8%	8.2%	5.4%	2.4%	5.1%	1.7%	3.7%	1.7%	8.2%
7 Income equality, 1996																							
Income share:																							
Bottom 50% of families	22.8%	21.9%	22.6%	22.9%	22.2%	23.4%	23.8%	23.3%	22.3%	22.7%	23.2%	22.4%	23.9%	24.0%	24.1%	18.2%	20.9%	19.9%	22.6%	22.6%	22.1%	24.1%	18.2%
8 Crime rate, 1996-1998																							
Serious violent crime	1.8	1.5	1.4	2.0	2.8	2.6	2.8	[illegible]	1.9	2.3	2.0	2.7	3.1	3.2	4.3	7.9	4.0	1.6	1.8	3.1	3.4	1.4	7.9
Break and enter	11.3	8.6	14.0	14.6	14.8	18.8	17.8	16.8	17.4	15.9	15.4	13.0	13.1	15.3	20.0	33.2	23.9	12.0	14.4	11.2	18.2	8.6	33.2
Total serious crime	13.1	10.1	15.4	16.7	17.6	21.4	20.6	19.8	19.3	18.2	17.5	15.7	16.3	18.5	24.4	41.1	28.0	13.7	16.2	14.3	21.6	10.1	41.1
9 Children in care, 1998/99																							
Number	238	158	333	749	495	738	1027	441	150	835	359	352	452	247	557	1325	358	192	163	772	9,937		
As % of population 0-18	1.1%	0.8%	1.1%	1.4%	1.4%	1.1%	0.7%	0.6%	0.8%	1.4%	1.1%	1.6%	1.6%	1.2%	1.4%	1.3%	0.9%	0.5%	0.4%	1.1%	1.0%	0.4%	1.6%
10 Housing affordability, 1996																							
Housing >30% of income	43.2%	48.6%	50.3%	50.4%	50.0%	49.0%	47.4%	45.2%	45.8%	53.8%	43.8%	40.5%	32.6%	29.3%	42.8%	47.3%	44.7%	44.5%	41.5%	48.2%	46.6%	29.3%	53.8%
Individual Capacities, Skills & Choices																							
11 Low birthweight births																							
Total number, 1994-1998	155	185	243	584	396	785	2,104	1,003	209	583	327	242	314	200	441	1,742	585	378	418	740	11,646		
As % of live births	3.9%	4.9%	4.3%	5.4%	5.3%	4.9%	5.6%	5.1%	4.5%	4.8%	4.9%	5.2%	4.7%	4.0%	5.0%	5.7%	5.7%	4.3%	5.0%	4.7%	5.1%	3.9%	5.7%
12 High school graduation																							
Percent of population 25-54	74.7%	76.9%	72.7%	75.5%	73.1%	71.9%	76.3%	80.3%	77.3%	73.7%	73.7%	65.9%	67.7%	66.4%	69.2%	80.6%	80.8%	89.5%	81.1%	83.0%	77.4%	89.5%	65.9%

+2 +6

Notes and Sources

HEALTH STATUS

1. Total number of infant deaths (age 0 to 364 days) for the 5-year period 1994-1998 and average annual rate per 1,000 live births. Provincial total includes one death of unspecified health region. B.C. Vital Statistics Agency, Annual Report 1998, Appendix 3, Table C.
2. Potential Years of Life Lost (under 75 years), expressed as an age standardized rate per 1,000 population, all causes of death, annual average for the 5-year period 1994-1998. B.C. Vital Statistics Agency. Obtained from the Health Data Warehouse, B.C. Ministry of Health.
3. Estimates of life expectancy at birth, 1995-1999. Prepared by Population Section, BC STATS, B.C. Ministry of Finance and Corporate Relations, July 2000.

LIVING AND WORKING CONDITIONS

4. Unemployment rate. 1996 Census, Semi-Custom Area Profile, Statistics Canada. Obtained from the Health Data Warehouse, B.C. Ministry of Health.
5. Per cent of the total population, population age 65 and over, all children under age 18, and children in female lone-parent families who are in family units with incomes below the Low Income Cut-Off (LICO). Low income cut-offs are set at income levels differentiated by family size and degree of urbanization. 1996 Census, custom tabulation GO0199, Statistics Canada. Obtained from the Health Data Warehouse, B.C. Ministry of Health.
6. Per cent of the population age 0 to 64 receiving income assistance (Basic BC Benefits) as at September 1999, by duration (receiving income assistance for less than one year and continuously for one year or longer). Ministry of Social Development and Economic Security Administrative Files and BC STATS population estimates. Data obtained from the Health Data Warehouse, B.C. Ministry of Health. Per cent of seniors who receive the maximum Guaranteed Income Supplement (GIS), 1999. Human Resources Development Canada. Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations, January 2000.
7. Income share of the bottom half (poorest 50 per cent) of households, 1996. The proportion of each region's household income that accrues to households earning less than the median income. In a situation of perfect equality, the bottom half (poorest) households would receive 50 per cent of the total income. Regions with values closer to 50 per cent have greater equality, while regions with lower value are less equal in terms of their household income distribution. Statistics Canada, 1996 Census. Data provided by Statistics Canada, Health Analysis and Modeling Group, November 1999.
8. Offences per 1,000 population, annual average for the 3-year period 1996-1998. Serious violent crime includes all crimes involving a weapon as well as sexual assaults resulting in bodily harm, non-sexual assaults resulting in serious injury, and abductions. Breaking and entering is a subset of property crime. Police Services Division, B.C. Ministry of Attorney General. Unpublished tables. Data provided by BC STATS, B.C. Ministry of Finance and Corporate Relations, January 2000. Crime rates are based on crimes reported to or by the police. Crime rates vary, sometimes dramatically, from one community to another. To minimize differences that might be due to reporting of minor infractions, data for "serious crimes" are shown here. Data on all reported crimes (violent, property, other, and total) are available from the Health Data Warehouse, B.C. Ministry of Health.
9. Children and youth in the care of child welfare agencies, number and as a per cent of each region's population age 0 to 18. Based on average month-end count for the fiscal year 1998/99. B.C. Ministry for Children and Families, Program Management and Audit Branch. Unpublished tables, March 2000.
10. Proportion of renter households spending 30 per cent or more of household income on shelter. 1996 Census, Semi-Custom Area Profile, Statistics Canada. Obtained from the Health Data Warehouse, B.C. Ministry of Health.

INDIVIDUAL CAPACITIES, SKILLS, AND CHOICES

11. Live births with birthweight less than 2,500 grams, total number for the 5-year period 1994-1998 and as a percentage of all live births. B.C. total includes 22 births of unspecified birthweight or region. B.C. Vital Statistics Agency, Annual Report 1998, Appendix 3, Table C.
12. Proportion of the population age 25-54 who have a high school graduation certificate or higher. Statistics Canada. 1996 Census. Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations.

6

Heath Indicators

Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
13 Post-secondary education																							
Percent of population 25-54	51.6%	54.2%	49.1%	52.5%	49.5%	46.5%	50.9%	54.9%	52.2%	50.7%	48.3%	42.2%	45.1%	43.9%	44.9%	60.3%	57.5%	68.0%	57.8%	59.5%	54.0%	68.0%	42.2%
14 Grade 12 exam completion																							
Mathematics 12	25.5%	28.3%	23.4%	25.3%	22.4%	25.8%	32.4%	40.9%	24.8%	27.9%	27.5%	16.7%	22.1%	24.0%	24.0%	46.6%	50.8%	47.7%	54.2%	32.9%	34.5%	54.2%	16.7%
English 12	61.4%	76.4%	65.5%	63.3%	70.9%	66.4%	64.6%	66.7%	64.5%	67.1%	64.4%	53.7%	60.7%	64.3%	69.0%	62.7%	69.2%	74.5%	62.4%	71.4%	66.0%	76.4%	53.7%
15 Smoking, 1997																							
Age 12 and over	28%	21%	21%	23%	27%	22%	19%	23%	25%	24%	26%	27%	29%	29%	28%	21%		17%		19%	22%	17%	29%
Age 12-18	16%	10%	13%	26%	20%	20%	11%	16%	14%	21%	24%	18%	18%	21%	22%	22%		15%		15%	20%	10%	26%
Age 19-24	37%	46%	34%	44%	41%	25%	22%	26%	43%	34%	44%	47%	41%	37%	28%	27%		34%		32%	31%	22%	47%
16 Pregnancy rates, 1998/99																							
Teens 15-17	17.8	17.7	19.7	22.9	29.3	27.8	22.9	21.7	35.3	34.0	32.3	39.4	36.5	44.5	30.9	19.9	22.8	17.6	16.0	28.9	25.58	16.0	44.5
Teens 15-19	31.2	28.3	33.6	36.7	43.0	42.0	36.9	33.7	47.0	48.8	54.4	55.1	56.4	60.2	49.6	33.6	41.6	26.4	27.8	46.1	40.0	26.4	60.2
Abortion rate 15-44	5.1	12.3	9.8	10.7	13.3	10.3	17.5	14.8	18.3	14.8	14.4	12.9	10.8	11.6	12.9	20.1	20.2	16.4	15.1	18.7	15.7	5.1	20.2
Physical Environment																							
17 Second-hand smoke exposure																							
% non-smokers age 12+	28%	21%	19%	17%	26%	17%	18%	17%	21%	22%	21%	30%	29%	34%	26%	12%		10%		13%	18%	10%	34%
% households with children	27%	17%	17%	18%	24%	22%	13%	15%	23%	23%	23%	24%	19%	33%	27%	15%		5%		12%	18%	5%	33%
18 Boil-water advisories, 1999																							
Number of advisories	10	54	10	11	38	16	1	9	17	15	9	2	6	0	8	0		4	0	4	214		
Number of water systems	218	294	145	128	232	281	67	33	164	247	159	365	128	215	214	2	0	25		64	2,981		
19 Hazards in food premises																							
Total number of food premises	724	817	705	1,352	958	1,318	2,873	1,453	642	1,491	833	541	726	572	773	5,268	1,053	870	1,056	1,934	25,959		
Food premises inspected	334	447	334	695	554	824	1,417	1,024	126	814	529	374	350	363	454	4,569	891	460	821	1,574	16,954		
Critical hazards found	134	337	43	297	442	622	584	559	40	540	158	158	197	149	333	2,499	585	400	294	826	9,197		
Hazards per 100 facilities	40.1	75.4	12.9	42.7	79.8	75.5	41.2	54.6	31.7	66.3	29.9	42.2	56.3	41.0	73.3	54.7	65.7	87.0	35.8	52.5	54.2	12.9	87.0
Health Services																							
20 Immunization rates, 2 year-olds																							
DPTP	84%	78%	77%	87%	93%	69%			86%	84%	84%	85%	77%	81%	90%				95%	88%	84%	95%	69%
MMR	84%	80%	76%	87%	93%	68%			86%	85%	84%	86%	78%	77%	91%				94%	86%	83%	94%	68%
Hib	84%	78%	77%	87%	94%	70%			88%	84%	83%	85%	79%	81%	90%				92%	87%	84%	94%	70%
21 Influenza immunization, 1998/99																							
Population age 65+	57%	50%	54%	52%	61%	43%	62%	55%	61%	64%	58%	57%	56%	59%	62%		55%	57%	57%		56%	64%	43%
Residents of care facilities	78%	85%		84%	90%	82%		85%	85%	84%	94%	93%	94%	87%	93%		85%	72%	82%		84%	94%	72%
Staff of care facilities	29%	24%		33%	36%	33%		37%	17%	30%	36%	28%	26%	26%	33%		37%	39%	36%		32%	39%	17%
22 Screening mammography																							
Participation rate, age 50-74	28.4%	39.3%	53.2%	54.5%	54.6%	41.3%	41.0%	43.1%	31.5%	45.6%	37.2%	31.0%	35.8%	35.8%	50.8%	36.2%	39.5%	46.3%	47.6%	50.7%	43.6%	54.6%	28.4%
23 Pap smears																							
Participation rate, age 20-69	56%	62%	64%	65%	61%				51%	63%	67%	50%	56%	54%	57%	67%				73%	67%	73%	50%
24 Children's ear infections																							
1st line antibiotic	1,006	1,034	2,158	3,409	2,201	5,473	10,269	5,015	1,106	3,924	2,405	1,105	1,808	1,083	2,248	3,549	1,878	2,065	1,533	4,204	57,651		
2nd-line/other antibiotic	303	231	474	795	787	1,090	2,956	1,393	217	1,286	576	311	588	270	640	1,443	585	643	599	1,212	16,438		
Total receiving antibiotic	1,309	1,265	2,632	4,204	2,988	6,563	13,225	6,408	1,323	5,210	2,981	1,416	2,396	1,353	2,888	4,992	2,463	2,708	2,132	5,416	74,089		
Children with ear infections	2,213	2,220	4,072	6,455	4,522	9,604	20,347	10,384	2,258	7,768	4,760	2,233	3,733	2,169	4,669	8,277	3,815	4,309	3,204	9,159	116,558		
% receiving antibiotic	59.2%	57.0%	64.6%	65.1%	66.1%	68.3%	65.0%	61.7%	58.6%	67.1%	62.6%	63.4%	64.2%	62.4%	61.9%	60.3%	64.6%	62.8%	66.5%	59.1%	63.6%	57.0%	68.3%
25 Breast-conserving surgery																							
As % of breast cancer surgery	58.1%	57.4%	54.1%	65.2%	56.2%	57.7%	62.7%	57.2%	58.8%	62.2%	70.5%	57.0%	50.4%	58.9%	58.8%	67.8%	57.9%	81.1%	77.3%	62.9%	63.5%	81.1%	50.4%

Heath Indicators

Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
13 Post-secondary education Percent of population 25-54	51.8%	54.2%	49.1%	52.5%	49.5%	46.5%	50.9%	54.9%	52.2%	50.7%	48.3%	42.2%	45.1%	43.9%	44.9%	60.3%	57.5%	68.0%	57.8%	59.5%	54.0%	68.0%	42.2%
14 Grade 12 exam completion																							
Mathematics 12	25.5%	28.3%	23.4%	25.3%	22.4%	25.8%	32.4%	40.9%	24.8%	27.9%	27.5%	16.7%	22.1%	24.0%	24.0%	46.6%	50.8%	47.7%	54.2%	32.9%	34.5%	54.2%	16.7%
English 12	61.4%	76.4%	65.5%	63.3%	70.9%	66.4%	64.6%	66.7%	64.5%	67.1%	64.4%	53.7%	60.7%	64.3%	69.0%	62.7%	69.2%	74.5%	62.4%	71.4%	66.0%	76.4%	53.7%
15 Smoking, 1997																							
Age 12 and over	26%	21%	21%	23%	27%	22%	19%	23%	25%	24%	26%	27%	29%	29%	28%	21%		17%		19%	22%	17%	29%
Age 12-18	16%	10%	13%	26%	20%	20%	11%	16%	14%	21%	24%	18%	18%	21%	22%	22%		15%		15%	20%	10%	26%
Age 19-24	37%	46%	34%	44%	41%	25%	22%	26%	43%	34%	44%	47%	41%	37%	28%	27%		34%		32%	31%	22%	47%
16 Pregnancy rates, 1998/99																							
Teens 15-17	17.8	17.7	19.7	22.9	29.3	27.8	22.9	21.7	35.3	34.0	32.3	39.4	36.5	44.5	30.9	19.9	22.8	17.6	16.0	28.9	25.58	16.0	44.5
Teens 15-19	31.2	28.3	33.6	36.7	43.0	42.0	36.9	33.7	47.0	48.8	54.4	55.1	56.4	60.2	49.6	33.6	41.6	26.4	27.8	46.1	40.0	26.4	60.2
Abortion rate 15-44	5.1	12.3	9.8	10.7	13.3	10.3	17.5	14.8	18.3	14.8	14.4	12.9	10.8	11.6	12.9	20.1	20.2	16.4	15.1	18.7	15.7	5.1	20.2
Physical Environment																							
17 Second-hand smoke exposure																							
% non-smokers age 12+	28%	21%	19%	17%	26%	17%	18%	17%	21%	22%	21%	30%	29%	34%	26%	12%		10%		13%	18%	10%	34%
% households with children	27%	17%	17%	18%	24%	22%	13%	15%	23%	23%	23%	24%	19%	33%	27%	15%		5%		12%	18%	5%	33%
18 Boil-water advisories, 1999																							
Number of advisories	10	54	10	11	38	16	1	9	17	15	9	2	6	0	8	0		4	0	4	214		
Number of water systems	218	294	145	128	232	281	67	33	164	247	159	365	128	215	214	2	0	25		64	2,981		
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Food premises inspected	334	447	334	695	554	824	1,417	1,024	126	814	529	374	350	363	454	4,569	891	460	821	1,574	16,954		
Critical hazards found	134	337	43	297	442	622	584	559	40	540	158	158	197	149	333	2,499	585	400	294	826	9,197		
Hazards per 100 facilities	40.1	75.4	12.9	42.7	79.8	75.5	41.2	54.6	31.7	66.3	29.9	42.2	56.3	41.0	73.3	54.7	65.7	87.0	35.8	52.5	54.2	12.9	87.0
Health Services																							
20 Immunization rates, 2 year-olds																							
DPTP	84%	78%	77%	87%	93%	69%			86%	84%	84%	85%	77%	81%	90%				95%	88%	84%	95%	69%
MMR	84%	80%	76%	87%	93%	68%			86%	85%	84%	86%	78%	77%	91%				94%	86%	83%	94%	68%
Hib	84%	78%	77%	87%	94%	70%			88%	84%	83%	85%	79%	81%	90%				92%	87%	84%	94%	70%
21 Influenza immunization, 1998/99																							
Population age 65+	57%	50%	54%	52%	61%	43%	62%	55%	61%	64%	58%	57%	56%	59%	62%		55%	57%	57%		56%	64%	43%
Residents of care facilities	78%	85%		84%	90%	82%		85%	85%	84%	94%	93%	94%	87%	93%		85%	72%	82%		84%	94%	72%
Staff of care facilities	29%	24%		33%	36%	33%		37%	17%	30%	36%	28%	26%	26%	33%		37%	39%	36%		32%	39%	17%
22 Screening mammography Participation rate, age 50-74	28.4%	39.3%	53.2%	54.5%	54.6%	41.3%	41.0%	43.1%	31.5%	45.6%	37.2%	31.0%	35.8%	35.8%	50.8%	36.2%	39.5%	46.3%	47.6%	50.7%	43.6%	54.6%	28.4%
23 Pap smears Participation rate, age 20-69	56%	62%	64%	65%	61%				51%	63%	67%	50%	56%	54%	57%	67%				73%	67%	73%	50%
24 Children's ear infections																							
1st line antibiotic	1,006	1,034	2,158	[illegible]	2,201	5,473	10,269	5,015	1,106	3,934	2,405	1,105	1,808	1,083	2,248	3,549	1,878	2,065	1,533	4,204	57,651		
2nd-line/other antibiotic	303	231	474	795	787	1,090	2,956	1,393	217	1,286	576	311	588	270	640	1,443	585	643	599	1,212	16,438		
Total receiving antibiotic	1,309	1,265	2,632	4,204	2,988	6,563	13,225	6,408	1,323	5,210	2,981	1,416	2,396	1,353	2,888	4,992	2,463	2,708	2,132	5,416	74,089		
Children with ear infections	2,213	2,220	4,072	6,455	4,522	9,604	20,347	10,384	2,258	7,768	4,700	2,233	3,733	2,169	4,669	8,277	3,815	4,309	3,204	9,159	116,558		
% receiving antibiotic	59.2%	57.0%	64.6%	65.1%	66.1%	68.3%	65.0%	61.7%	58.6%	67.1%	62.6%	63.4%	64.2%	62.4%	61.9%	60.3%	64.6%	62.8%	66.5%	59.1%	63.6%	57.0%	68.3%
25 Breast-conserving surgery As % of breast cancer surgery	58.1%	57.4%	54.1%	65.2%	56.2%	57.7%	62.7%	57.2%	58.8%	62.2%	70.5%	57.0%	50.4%	58.9%	58.8%	67.8%	57.9%	81.1%	77.3%	62.9%	63.5%	81.1%	50.4%

13. Proportion of the population age 25-54 who have a post-secondary certificate, diploma, or degree of some type. 1996 Census. Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations.

14. Proportion of Grade 12 students who took and passed the provincial exam, 1998/99. B.C. Ministry of Education. Prepared by BC STATS, B.C. Ministry of Finance and Corporate Relations.

15. Proportion of the population who were current smokers, 1997. Current smokers are those who smoke cigarettes on either a daily or occasional basis. Vancouver data are for Vancouver/Richmond; Simon Fraser includes Burnaby. Heart and Stroke Foundation of B.C. and Yukon. Tobacco Use in B.C. 1997. A survey conducted by the Angus Reid Group with a grant from the B.C. Ministry of Health.

16. Estimated number of pregnancies per 1,000 teenage women and number of induced abortions per 1,000 women age 15-44, 1998/99. Pregnancies include live births, stillbirths, miscarriages resulting in hospitalization (ICD-9 630-634, 637), and induced abortions (ICD-9 635, 636, 638) performed in hospitals or in clinics. Multiple birth events (i.e., twins, triplets) are only counted as one pregnancy. Pregnancy Counts and Rates by Age Groups by Health Region, British Columbia 1990/91 to 1998/99. Prepared by B.C. Vital Statistics Agency, Ministry of Health. Data acquired from the Health Data Warehouse, B.C. Ministry of Health.

PHYSICAL ENVIRONMENT

17. Proportion of non-smokers (age 12 and older) who have daily or nearly-daily exposure to second-hand smoke at home, at work or school, or in other public settings. Proportion of households with children age 11 years and under where there is daily or nearly-daily exposure to second-hand smoke. Simon Fraser region includes Burnaby, and Vancouver includes Richmond. Tobacco Use in B.C. 1997. A survey conducted by the Angus Reid Group with a grant from the B.C. Ministry of Health.

18. Number of boil-water advisories in place as of December 1999 and the number of water systems as of March 31, 1999. Public Health Protection Branch, B.C. Ministry of Health. West Kootenay has a higher number of boil-water advisories than other areas because of the large number of small water systems using untreated surface water supplies.

19. Number of critical hazards identified during inspections of food facilities, expressed as a rate per 100 inspected premises, fiscal year 1998/99. Critical hazards are health hazards that require immediate attention. Food premises include restaurants and other establishments that serve meals to the public, stores, and other facilities as defined by the Food Premises Regulations. Public Health Protection Branch, B.C. Ministry of Health. Unpublished tables.

HEALTH SERVICES

20. Per cent of children who, by their second birthday, have completed the primary series of immunization, based on a one-month sample of children who were two years old in April 1999 and for whom children health records were available. Comparable data not available for South Fraser Valley, Simon Fraser, Burnaby, Vancouver, and North Shore. DPTP: Diphtheria, Pertussis, Tetanus, Polio. MMR: Measles, Mumps, Rubella. Hib: Haemophilus influenzae type b. Provincial summary compiled by Preventive Health Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

21. Estimated per cent immunized against influenza, B.C. population age 65 and older and residents/staff of care facilities, 1998/99. Data for population age 65 and older are from Epidemiology Services, B.C. Centre for Disease Control Society. Data for residents and staff of care facilities are from the provincial summary compiled by Preventive Health Branch, B.C. Ministry of Health; Simon Fraser figures include Burnaby. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

22. Per cent of women age 50-74 who attended the Screening Mammography Program of BC at least once in the two year period 1997 to 1998. Screening Mammography Program of British Columbia, BC Cancer Agency. Data obtained from the Health Data Warehouse, B.C. Ministry of Health. Some women receive screens at centres that are not affiliated with the Screening Mammography Program, so are not included in these data.

23. Per cent of women age 20-69 who had at least one Pap smear in the 30-month period July 1996 to December 1998. 1999 Annual Report, Cervical Cancer Screening Program, a program of the BC Cancer Agency. * Greater Vancouver includes Burnaby, North Shore, Richmond, Fraser Valley, South Fraser Valley, and Simon Fraser regions.

24. Number and per cent of children age 0-14 diagnosed with otitis media (ICD-9 381-382) who received a prescription for antibiotics after visiting a general practitioner and number who received first-line (first choice) or second-line (alternative) treatment on their first prescription, 1998/99. B.C. total includes 387 children of unspecified health region. Source: Medical Services Plan and PharmaNet. Prepared by Planning and Evaluation, B.C. Ministry of Health. First-line and second-line antibiotics are those specified in the Ontario Anti-infective Review Panel's Anti-infective Guidelines for Community-Acquired Infections, 2nd edition. Toronto, ON: Publications Ontario, 1997.

25. Proportion of female breast cancer surgery patients who received breast-conserving surgery, 3-year average for the period 1996/97 to 1998/99. Data are for acute, rehabilitation, and day surgery levels of care. Breast-conserving surgery (lumpectomy), followed by radiation therapy, is the recommended procedure for most women with early breast cancer. Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

Heath Indicators

Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
26 Cesarean deliveries																							
As % of births 1994-1998	17.6%	18.2	24.4%	18.8%	24.2%	20.6%	21.2%	18.2%	19.4%	19.9%	20.7%	24.1%	19.4%	19.2%	20.7%	20.0%	15.8%	18.9%	20.8%	23.7%	20.3%	15.8%	24.4%
27 Preventable admissions																							
Rate per 1,000 population	4.5	4.9	3.4	4.3	4.3	4.1	2.7	3.2	5.4	3.5	5.7	5.5	7.7	6.1	4.5	3.3	2.6	2.0	2.7	4.0	3.7	2.0	7.7
28 May not require hospitalization																							
Cases per 1,000	11.2	14.2	8.2	8.5	11.1	9.6	6.8	8.1	9.8	7.7	11.8	11.2	12.5	11.5	10.6	5.9	6.0	5.7	6.3	9.2	8.3	5.7	14.2
As % of all cases	8.7%	10.1%	7.5%	7.8%	9.9%	8.8%	7.5%	9.0%	8.6%	7.5%	10.1%	8.2%	9.7%	9.6%	9.3%	7.7%	7.6%	7.7%	8.2%	9.4%	8.4%	7.5%	10.1%
Days per 1,000	31.8	37.5	23.4	24.9	35.7	27.6	18.4	23.6	23.4	28.7	32.8	30.9	32.7	37.1	33.0	18.3	13.9	17.1	15.0	34.8	24.8	13.9	37.5
As % of all hospital-days	4.8%	5.2%	3.8%	4.0%	5.7%	5.0%	3.4%	4.3%	3.7%	4.7%	5.4%	4.6%	4.9%	5.3%	5.3%	3.1%	2.7%	3.3%	3.1%	5.5%	4.2%	2.7%	5.7%
29 Expected versus actual stay																							
Actual days of stay	4.5	4.2	4.6	4.8	4.6	4.3	4.6	4.4	4.2	4.9	3.8	3.8	3.6	4.2	4.1	5.5	4.6	5.5	4.7	5.5	4.7		
Expected days of stay	4.9	4.6	5.2	5.5	5.0	4.9	5.0	4.9	4.9	5.2	4.3	4.2	4.3	4.4	4.4	5.6	4.9	5.5	5.1	5.5	5.1		
Difference (actual – expected)	–0.5	–0.4	–0.6	–0.7	–0.4	–0.6	–0.4	–.04	–.06	–0.2	–0.5	–.04	–0.6	–0.1	–0.3	0.0	–0.3	0.0	–0.5	0.0	–0.4	–0.7	0.0
30 Alternate level of care days																							
As % of acute care days	9.8%	6.2%	16.1%	10.3%	13.1%	9.8%	11.4%	11.3%	7.0%	9.0%	12.6%	10.5%	14.5%	7.4%	10.2%	10.2%	11.3%	5.0%	8.9%	7.2%	10.1%	5.0%	16.1%
31 Community follow-up, 98/99																							
Mental health admissions	448	588	583	1,457	818	1,388	2,065	1,880	496	1,049	809	466	764	419	736	3,344		511		1,907	19,914		
% seen <30 days of discharge	66.5%	70.2%	76.0%	70.8%	64.9%	73.7%	73.6%	69.7%	76.0%	78.7%	62.4%	58.4	50.3%	57.5%	60.9%	57.4%		74.2%		67.8%	66.8%	78.7%	50.3%
32 Medically treatable diseases																							
Total deaths, 1994-1998	5	12	14	31	24	33	80	39	9	35	20	17	18	12	25	108	19	26	12	43	582		
SMR	0.41	0.95	0.80	0.93	1.20	1.03	1.01	0.86	0.81	0.98	1.09	1.51	1.42	1.36	1.34	1.30	0.67	0.91	0.49	0.87	1.00	0.41	1.51
Disease & Injury Prevention																							
33 Cardiovascular disease																							
Death rate per 10,000	23.0	24.1	23.8	20.3	24.4	24.3	22.4	24.4	24.7	23.5	24.4	25.2	26.1	23.2	25.5	20.9	23.0	20.5	19.1	20.3	22.3	19.1	26.1
34 Cancer death rates																							
Lung	4.7	4.4	4.5	4.2	5.1	4.6	4.4	5.1	5.1	4.7	4.8	5.1	5.1	5.9	5.5	4.2	4.4	3.5	4.1	4.5	4.5	3.5	5.9
Breast	2.0	2.6	2.4	2.2	2.7	2.3	2.6	2.7	2.6	2.6	2.5	3.0	2.0	2.6	2.7	2.2	2.5	2.6	2.2	3.1	2.5	2.0	3.1
All cancers	15.5	18.0	16.8	16.0	17.3	16.9	16.8	18.1	17.8	17.6	18.8	18.4	16.8	19.2	19.9	15.7	16.6	16.0	15.1	17.4	16.8	15.1	19.9
35 Respiratory disease deaths																							
Rate per 10,000	6.0	6.0	5.7	5.9	7.4	6.1	5.7	7.2	5.0	6.1	6.1	7.7	6.7	7.8	7.8	6.6	6.3	5.8	5.6	5.6	6.2	5.0	7.8
36 Mental health hospitalizations																							
Number of cases, 1998/99	585	728	818	1,859	1,014	1,675	2,723	1,760	655	1,458	1,035	579	916	519	862	3,776	628	704	760	2,511	25,912		
Hospital-days	4,719	5,854	7,221	16,202	9,227	13,778	35,154	23,102	5,542	19,434	8,623	3,544	7,231	5,393	9,014	55,449	5,393	10,233	9,166	39,386	296,837		
Cases per 1,000 population	7.4	8.9	7.0	8.0	7.7	7.3	5.0	5.6	8.4	6.1	8.7	7.9	10.6	8.4	6.8	6.3	3.2	3.9	4.6	7.2	6.5	3.2	10.6
Average length of stay	8.1	8.0	8.8	8.7	9.1	8.2	12.9	13.1	8.5	13.3	8.3	6.1	7.9	10.4	10.5	147	8.6	14.5	12.1	15.7	11.5		
37 Vaccine preventable diseases																							
Cases, 1998																							
Measles	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	3		
Pertussis	14	7	2	13	11	45	92	26	14	28	19	13	3	6	5	22	9	21	7	2	359		
Hepatitis B	7	4	9	6	6	17	68	35	15	33	3	4	6	0	4	80	43	78	275	42	735		
Rate per 100,000																							
Measles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.4
Pertussis	17.2	8.5	1.7	5.7	8.1	18.8	16.3	8.2	17.9	11.6	15.5	16.9	3.3	9.1	3.7	3.9	4.8	11.7	4.3	0.6	9.0	0.6	18.8
Hepatitis B	8.6	4.8	7.6	2.6	4.4	7.1	12.0	11.1	19.2	13.6	2.4	5.2	6.5	0.0	3.0	14.2	22.7	43.4	169.5	12.5	18.3	0.0	169.5

Heath Indicators

Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
26 Cesarean deliveries																							
As % of births 1994-1998	17.6%	18.2	24.4%	18.8%	24.2%	20.6%	21.2%	18.2%	19.4%	19.9%	20.7%	24.1%	19.4%	19.2%	20.7%	20.0%	15.8%	18.9%	20.8%	23.7%	20.3%	15.8%	24.4%
27 Preventable admissions																							
Rate per 1,000 population	4.5	4.9	3.4	4.3	4.3	4.1	2.7	3.2	5.4	3.5	5.7	5.5	7.7	6.1	4.5	3.3	2.6	2.0	2.7	4.0	3.7	2.0	7.7
28 May not require hospitalization																							
Cases per 1,000	11.2	14.2	8.2	8.5	11.1	9.6	6.8	8.1	9.8	7.7	11.8	11.2	12.5	11.5	10.6	5.9	6.0	5.7	6.3	9.2	8.3	5.7	14.2
As % of all cases	8.7%	10.1%	7.5%	7.8%	9.9%	8.8%	7.5%	9.0%	8.6%	7.5%	10.1%	8.2%	9.7%	9.6%	9.3%	7.7%	7.6%	7.7%	8.2%	9.4%	8.4%	7.5%	10.1%
Days per 1,000	31.8	37.5	23.4	24.9	35.7	27.6	18.4	23.6	23.4	28.7	32.8	30.9	32.7	37.1	33.0	18.3	13.9	17.1	15.0	34.8	24.8	13.9	37.5
As % of all hospital-days	4.8%	5.2%	3.8%	4.0%	5.7%	5.0%	3.4%	4.3%	3.7%	4.7%	5.4%	4.6%	4.9%	5.3%	5.3%	3.1%	2.7%	3.3%	3.1%	5.5%	4.2%	2.7%	5.7%
29 Expected versus actual stay																							
Actual days of stay	4.5	4.2	4.6	4.8	4.6	4.3	4.6	4.4	4.2	4.9	3.8	3.8	3.6	4.2	4.1	5.5	4.6	5.5	4.7	5.5	4.7		
Expected days of stay	4.9	4.6	5.2	5.5	5.0	4.9	5.0	4.9	4.9	5.2	4.3	4.2	4.3	4.4	4.4	5.6	4.9	5.5	5.1	5.5	5.1		
Difference (actual – expected)	–0.5	–0.4	–0.6	–0.7	–0.4	–0.6	–0.4	–.04	–0.6	–0.2	–0.5	–.04	–0.6	–0.1	–0.3	0.0	–0.3	0.0	–0.5	0.0	–0.4	–0.7	0.0
30 Alternate level of care days																							
As % of acute care days	9.8%	6.2%	16.1%	10.3%	13.1%	9.8%	11.4%	11.3%	7.0%	9.0%	12.0%	10.5%	14.5%	7.4%	10.2%	10.2%	11.3%	5.0%	8.9%	7.2%	10.1%	5.0%	16.1%
31 Community follow-up, 98/99																							
Mental health admissions	448	588	583	1,457	818	1,388	2,065	1,880	496	1,049	809	466	764	419	736	3,344		511		1,907	19,914		
% seen <30 days of discharge	66.5%	70.2%	76.0%	70.8%	64.9%	73.7%	73.6%	69.7%	76.0%	78.7%	62.4%	58.4	50.3%	57.5%	60.9%	57.4%		74.2%		67.8%	66.8%	78.7%	50.3%
32 Medically treatable diseases																							
Total deaths, 1994-1998	5	12	14	31	24	33	80	39	9	35	20	17	18	12	25	108	19	26	12	43	582		
SMR	0.41	0.95	0.80	0.93	1.20	1.03	1.01	0.86	0.81	0.98	1.09	1.51	1.42	1.36	1.34	1.30	0.67	0.91	0.49	0.87	1.00	0.41	1.51
Disease & Injury Prevention																							
33 Cardiovascular disease																							
Death rate per 10,000	23.0	24.1	23.8	20.3	24.4	24.3	22.4	24.4	24.7	23.5	24.4	25.2	26.1	23.2	25.5	20.9	23.0	20.5	19.1	20.3	22.3	19.1	26.1
34 Cancer death rates																							
Lung	4.7	4.4	4.5	4.2	5.1	4.6	4.4	5.1	5.1	4.7	4.8	5.1	5.1	5.9	5.5	4.2	4.4	3.5	4.1	4.5	4.5	3.5	5.9
Breast	2.0	2.6	2.4	2.2	2.7	2.3	2.6	2.7	2.6	2.6	2.5	3.0	2.0	2.6	2.7	2.2	2.5	2.6	2.2	3.1	2.5	2.0	3.1
All cancers	15.5	18.0	16.8	16.0	17.3	16.9	16.8	18.1	17.8	17.6	18.8	18.4	16.8	19.2	19.9	15.7	16.6	16.0	15.1	17.4	16.8	15.1	19.9
35 Respiratory disease deaths																							
Rate per 10,000	6.0	6.0	5.7	5.9	7.4	6.1	5.7	7.2	5.0	6.1	6.1	7.7	6.7	7.8	7.8	6.6	6.3	5.8	5.6	5.6	6.2	5.0	7.8
36 Mental health hospitalizations																							
Number of cases, 1998/99	585	728	818	1,859	1,014	1,675	2,723	1,760	655	1,458	1,035	579	916	519	862	3,776	628	704	780	2,511	25,912		
Hospital-days	4,719	5,854	7,221	16,202	9,227	13,778	35,154	23,102	5,542	19,434	8,673	3,544	7,231	5,393	9,014	55,449	5,393	10,233	9,166	39,386	296,837		
Cases per 1,000 population	7.4	8.9	7.0	8.0	7.7	7.3	5.0	5.6	8.4	6.1	8.7	7.9	10.6	8.4	6.8	6.3	3.2	3.9	4.6	7.2	6.5	3.2	10.6
Average length of stay	8.1	8.0	8.8	8.7	9.1	8.2	12.9	13.1	8.5	13.3	8.3	6.1	7.9	10.4	10.5	147	8.6	14.5	12.1	15.7	11.5		
37 Vaccine preventable diseases																							
Cases, 1998																							
Measles	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	3		
Pertussis	14	7	2	13	11	45	92	26	14	28	19	13	3	6	5	22	9	21	7	2	359		
Hepatitis B	7	4	9	6	6	17	68	35	15	33	3	4	6	0	4	80	43	78	275	42	735		
Rate per 100,000																							
Measles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.4
Pertussis	17.2	8.5	1.7	5.7	8.1	18.8	16.3	8.2	17.9	11.6	15.5	16.9	3.3	9.1	3.7	3.9	4.8	11.7	4.3	0.6	9.0	0.6	18.8
Hepatitis B	8.6	4.8	7.6	2.6	4.4	7.1	12.0	11.1	19.2	13.6	2.4	5.2	6.5	0.0	3.0	14.2	22.7	43.4	169.5	12.5	18.3	0.0	169.5

26. Cesarean deliveries, as a per cent of live births over the 5-year period 1994-1998. B.C. Vital Statistics Agency, Annual Report 1998, Appendix 3, Table C.

27. Acute care hospitalizations for conditions that can usually be managed in the community without the need for hospital admission, expressed as a rate per 1,000 population (age standardized), 1998/99. Includes cases with a primary diagnosis of diabetes (ICD-9 250), alcohol and drug-related conditions (ICD-9 291-292, 303-305), neurosis (ICD-9 300), depression (ICD-9 311), hypertension (ICD-9 401-405), asthma (ICD-9) 493). This indicator is also called "Ambulatory Sensitive Conditions". Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

28. Hospital cases and days that May Not Require Hospitalization, expressed as a rate per 1,000 population and as a per cent of all inpatient cases and days, acute and rehabilitation levels of care, 1998/99. MNRH is a classification developed by the Canadian Institute for Health Information. MNRH is used to describe cases in which the combination of diagnosis, procedure, and age usually means that care can be provided properly on a non inpatient basis. Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

29. Average length of stay that acute care patients spent in hospital, compared to their Expected Length of Stay (ELOS), 1998/99. ELOS depends on the patient's diagnosis, their age, and whether they have complications that make their care more complex. Data are by patients' region of residence (not by location of hospital to which they were admitted). Morbidity Database, Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

30. Proportion of hospital-days where a patient occupying an acute care hospital bed was well enough to have been cared for elsewhere, 1998/99. Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

31. Number of cases (age 15-64) admitted to acute care hospitals with a mental health diagnosis (primary diagnosis of ICD-9 290-314) and proportion who received at least one community contact with a community mental health centre or a fee-for-service general practitioner or psychiatrist, within 30 days of discharge from hospital. Data are for fiscal year 1998/99. Vancouver and Richmond data are combined; Simon Fraser includes Burnaby. Provincial total includes186 cases of unspecified health region. Source: Hospital Morbidity Database, Medical Service Plan Claims Database, and Client/Patient Information Management (CPIM) LAN Database. Unpublished tables. Prepared by Information and Analysis Branch, B.C. Ministry of Health.

32. Deaths due to medically-treatable diseases, total number for the 5-year period 1994-1998 and standardized mortality ratio (SMR). B.C. Vital Statistics Agency, Annual Report 1998, Appendix 3, Table C.

DISEASE AND INJURY PREVENTION

33. Age standardized mortality rates, cardiovascular disease (ICD-9 390-459), annual average for 5-year period 1994-1998. B.C. Vital Statistics Agency, Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

34. Age standardized mortality rates, lung cancer (ICD-9 162), female breast cancer (ICD-9 174), and all cancers (ICD-9 140-208), annual average for 5-year period 1994-1998. B.C. Vital Statistics Agency, Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

35. Age standardized mortality rates, diseases of the respiratory system (ICD-9 460-519), annual average for 5-year period 1994-1998. B.C. Vital Statistics Agency, Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

36. Number of hospital admissions (all ages) due to mental disorders (primary diagnosis ICD-9 290-319), days of stay associated with those cases, and rate (cases per 1,000 population, age standardized), acute and rehabilitation care, 1998/99. B.C. total includes 347 cases of unspecified health region. PURRFECT 5.0. Information and Analysis Branch, B.C. Ministry of Health.

37. Reported cases and rates per 100,000 population, 1998. Hepatitis B includes acute cases (persons recently infected) and undetermined cases; some of the undetermined cases will ultimately be classified as chronic. Epidemiology Services, B.C. Centre for Disease Control Society. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

Heath Indicators
Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
38 Tuberculosis																							
Cases, 1999	2	1	3	5	1	9	49	32	1	4	4	7	3	4	6	143	27	10	11	16	338		
Rate per 100,000	2.5	1.2	2.5	2.2	0.7	3.7	8.5	9.9	1.3	1.6	3.3	9.1	3.3	6.1	4.5	25.1	14.1	5.5	6.7	4.8	8.4	0.7	25.1
39 HIV infection																							
New positive cases, 1998	1	1	4	11	10	17	31	22	3	10	4	1	2	0	2	307	9	11	7	28	482		
Rate per 100,00	1.2	1.2	3.4	4.8	7.4	7.1	5.5	7.0	3.8	4.1	3.3	1.3	2.2	0.0	1.5	54.5	4.8	6.1	4.3	8.4	12.0	0.0	54.5
40 Sexually transmitted disease																							
Cases, 1998																							
Chlamydia	44	141	73	202	192	233	407	229	84	275	192	107	147	115	201	1,290	206	97	131	397	4,769		
Gonorrhea	3	0	0	4	6	16	35	16	2	8	2	6	8	10	16	343	30	12	11	13	541		
Syphilis	0	0	0	0	0	0	7	3	0	1	1	0	0	0	0	92	5	0	3	0	112		
Rate per 100,00																							
Chlamydia	54.2	170.7	61.8	87.8	141.8	97.5	72.0	72.5	107.3	113.5	156.3	139.4	160.4	173.6	150.4	228.8	108.7	53.9	80.7	118.4	118.9	53.9	228.8
Gonorrhea	3.7	0.0	0.0	1.7	4.4	6.7	6.2	5.1	2.6	3.3	1.6	7.8	8.7	15.1	12.0	60.8	15.8	6.7	6.8	3.9	13.5	0.0	60.8
Syphilis	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.0	0.0	0.4	0.8	0.0	0.0	0.0	0.0	16.3	2.6	0.0	1.9	0.0	2.8	0.0	16.3
41 Intestinal illnesses																							
Reported cases, 1998	76	99	141	213	153	454	1,082	497	207	303	210	16	90	27	77	1,602	325	558	380	585	7,095		
Reported cases per 10,000	9.4	12.0	11.9	9.3	11.3	19.0	19.1	15.7	26.4	12.5	17.1	2.1	9.8	4.1	5.8	28.4	17.1	31.0	23.4	17.4	17.7	2.1	31.0
Hospital cases, 1998/99	49	54	22	130	83	207	311	180	37	109	65	81	64	22	54	288	94	80	101	209	2,249		
Hospitalizations per 10,000	6.2	6.7	1.9	5.4	6.3	8.0	5.2	5.7	4.8	4.5	5.4	10.7	6.8	3.2	4.1	5.5	5.1	4.6	6.7	6.1	5.6	1.9	10.7
MD office visits,1998	2,037	2,806	3,227	4,648	3,775	8,359	20,994	16,405	2,435	6,939	5,173	1,528	2,9077	1,592	1,787	34,195	8,072	4,2107	15,689	19,671	167,563		
MD office visits per 1,000	25.1	34.0	27.3	20.2	27.9	35.0	37.2	51.9	31.1	28.6	42.1	19.9	31.7	24.0	13.4	60.7	42.6	23.4	96.7	58.7	41.8	13.4	96.7
42 Waterborne disease outbreaks																							
Total number, 1980-2000	6	3	2	5	3	3	0	0	1	0	0	1	1	0	3	0	0	0	0	1	29		
43 Unintentional injuries, 1994-1998																							
Deaths, age 0-24	26	38	66	64	64	90	127	62	42	93	47	63	48	41	84	97	37	31	38	63	1,224		
Rate per 100,000	19.2	28.9	35.7	19.4	27.8	21.7	13.4	12.3	35.2	24.8	22.7	45.7	26.2	31.1	32.6	13.2	13.4	11.8	15.0	13.2	19.4	11.8	45.7
Deaths, all ages	129	227	288	427	357	485	803	410	181	535	264	245	219	139	316	1359	288	258	171	622	7,737		
ASMR (per 100,000)	32.7	54.3	49.6	32.5	58.1	42.0	30.3	28.4	50.1	45.0	47.7	72.3	56.1	49.2	57.0	44.0	27.9	26.9	22.7	29.0	38.5	22.7	72.3
44 Hip fractures, age 65+																							
Hospital cases, 1998/99	96	135	185	355	93	231	482	313	111	302	78	59	61	33	63	640	223	176	116	498	4,259		
Rate per 1,000 population age 65+	10.6	11.5	10.8	8.4	7.5	7.6	7.7	10.9	13.4	9.0	7.3	11.9	14.0	9.5	10.1	8.8	8.8	7.2	7.3	7.7	8.4	7.2	14.0
45 Spousal assault, 1996-1998																							
Incidents (3-year total)	621	433	849	1,691	1,475	2,408	3,632	1,841	714	1,962	1,526	958	1,601	914	1,890	3,275	1,037	685	557	1,387	29,456		
Rate per 1,000 population	2.6	1.8	2.4	2.5	3.7	3.4	2.2	2.0	3.1	2.7	4.2	4.2	5.9	4.7	4.8	2.0	1.8	1.3	1.2	1.4	2.5	1.2	5.9
46 Child abuse & neglect																							
Confirmed reports (2-year total)	533	236	315	697	411	557	897	515	186	730	442	299	535	387	711	1,162	440	164	190	635	10,042		
Rate per 1,000 population age 0-18	12.6	5.7	5.3	6.7	5.8	4.1	3.0	3.2	4.8	6.1	6.6	6.8	9.2	9.3	9.1	5.9	5.9	2.1	2.6	4.6	5.2	2.1	12.6
47 Illicit drug deaths																							
Total deaths, 1993-1998	6	13	21	26	52	80	179	125	22	77	56	10	26	10	38	818	81	38	23	129	1,892		
Rate per 100,000 pop age 15-64	1.9	4.1	4.9	3.2	10.0	9.3	8.4	10.1	7.5	8.7	11.9	3.4	7.1	3.9	7.1	34.5	10.4	5.2	3.6	10.0	12.2	1.9	34.5
48 Suicide																							
Total deaths, 1994-1998	50	61	88	161	120	147	245	182	64	189	103	60	66	31	72	413	99	84	65	237	2,541		
Rate per 100,000 population	1.3	1.4	1.6	1.4	1.9	1.3	0.9	1.2	1.7	1.7	1.7	1.7	1.5	1.0	1.1	1.4	1.0	0.9	0.8	1.3	1.3	0.8	1.9

Heath Indicators

Regional Data

	East Kootenay	West Kootenay	North Okanagan	Okanagan Simil	Thompson	Fraser Valley	South Fraser	Simon Fraser	Coast Garibaldi	Central Vancouver Island	Upper Island	Cariboo	North West	Peace Liard	Northern Interior	Vancouver	Burnaby	North Shore	Richmond	Capital	British Columbia	Best Rate	Worst Rate
38 Tuberculosis																							
Cases, 1999	2	1	3	5	1	9	49	32	1	4	4	7	3	4	6	143	27	10	11	16	338		
Rate per 100,000	2.5	1.2	2.5	2.2	0.7	3.7	8.5	9.9	1.3	1.6	3.3	9.1	3.3	6.1	4.5	25.1	14.1	5.5	6.7	4.8	8.4	0.7	25.1
39 HIV infection																							
New positive cases, 1998	1	1	4	11	10	17	31	22	3	10	4	1	2	0	2	307	9	11	7	28	482		
Rate per 100,00	1.2	1.2	3.4	4.8	7.4	7.1	5.5	7.0	3.8	4.1	3.3	1.3	2.2	0.0	1.5	54.5	4.8	6.1	4.5	8.4	12.0	0.0	54.5
40 Sexually transmitted disease																							
Cases, 1998																							
Chlamydia	46	141	73	202	192	233	407	229	84	275	192	107	147	115	201	1,290	206	97	131	397	4,769		
Gonorrhea	3	0	0	4	6	16	35	16	2	8	2	6	8	10	16	343	30	12	11	13	541		
Syphilis	0	0	0	0	0	0	7	3	0	1	1	0	0	0	0	92	5	0	3	0	112		
Rate per 100,00																							
Chlamydia	54.2	170.7	61.8	87.8	141.8	97.5	72.0	72.5	107.3	113.5	156.3	139.4	160.4	173.6	150.4	228.8	108.7	53.9	80.7	118.4	118.9	53.9	228.8
Gonorrhea	3.7	0.0	0.0	1.7	4.4	6.7	6.2	5.1	2.6	3.3	1.6	7.8	8.7	15.1	12.0	60.8	15.8	6.7	6.8	3.9	13.5	0.0	60.8
Syphilis	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.0	0.0	0.4	0.8	0.0	0.0	0.0	0.0	16.3	2.6	0.0	1.8	0.0	2.8	0.0	16.3
41 Intestinal illnesses																							
Reported cases, 1998	76	99	141	213	153	454	1,082	497	207	303	210	16	90	27	77	1,602	325	558	380	585	7,095		
Reported cases per 10,000	9.4	12.0	11.9	9.3	11.3	19.0	19.1	15.7	26.4	12.5	17.1	2.1	9.8	4.1	5.8	28.4	17.1	31.0	23.4	17.4	17.7	2.1	31.0
Hospital cases, 1998/99	49	54	22	130	83	207	311	180	37	109	65	81	64	22	54	288	94	80	101	209	2,240		
Hospitalizations per 10,000	6.2	6.7	1.9	5.4	6.3	8.0	5.2	5.7	4.8	4.5	5.4	10.7	6.8	3.2	4.1	5.5	5.1	4.6	6.7	6.1	5.6	1.9	10.7
MD office visits,1998	2,037	2,806	3,227	4,648	3,775	8,359	20,994	16,405	2,435	6,909	5,173	1,528	2,9077	1,592	1,787	34,195	8,072	4,2107	15,080	19,671	167,563		
MD office visits per 1,000	25.1	34.0	27.3	20.2	27.2	35.0	37.2	51.9	31.1	28.6	42.1	19.9	31.7	24.0	13.4	60.7	42.6	73.4	96.7	58.7	41.8	13.4	96.7
42 Waterborne disease outbreaks																							
Total number, 1980-2000	6	3	2	5	3	3	0	0	1	0	0	1	1	0	3	0	0	0	0	1	29		
43 Unintentional injuries, 1994-1998																							
Deaths, age 0-24	26	38	66	64	64	90	127	62	42	90	47	63	48	41	84	97	37	31	38	63	1,224		
Rate per 100,000	19.2	28.9	30.7	19.4	27.8	21.7	13.4	12.3	35.2	24.8	22.7	45.7	26.2	31.1	32.6	13.2	13.4	11.8	15.0	13.2	19.4	11.8	45.7
Deaths, all ages	129	227	288	427	357	485	803	410	181	535	264	245	219	139	316	1359	288	258	171	622	7,737		
ASMR (per 100,000)	[illegible]	56.3	40.6	32.5	50.1	42.0	30.3	28.4	50.1	45.0	47.7	72.3	56.1	49.2	57.0	44.0	27.9	26.9	22.7	29.0	38.5	22.7	72.3
44 Hip fractures, age 65+																							
Hospital cases, 1998/99	99	135	188	355	85	231	482	313	177	302	78	59	61	33	63	640	223	176	116	498	4,239		
Rate per 1,000 population age 65+	10.6	11.5	10.8	8.4	7.5	7.6	7.7	10.9	13.4	9.0	7.3	11.9	14.0	9.5	10.1	8.8	8.8	7.2	7.3	7.7	8.4	7.2	14.0
45 Spousal assault, 1996-1998																							
Incidents (3-year total)	[illegible]	493	846	1,081	1,475	2,408	3,632	1,841	714	1,082	1,536	958	1,601	914	1,890	3,275	1,067	685	357	1,387	25,456		
Rate per 1,000 population	2.6	1.8	2.4	2.3	3.7	3.4	2.2	2.0	3.1	2.7	4.2	4.2	5.9	4.7	4.8	2.0	1.5	1.3	1.2	1.4	2.5	1.2	5.9
46 Child abuse & neglect																							
Confirmed reports (2-year total)	383	239	315	487	411	557	897	515	186	700	442	299	535	387	711	1,182	440	164	190	635	10,042		
Rate per 1,000 population age 0-18	12.6	5.7	5.3	6.7	5.8	4.1	3.0	3.2	4.8	6.1	6.6	6.8	9.2	9.3	9.1	5.9	5.9	2.1	2.6	4.6	5.2	2.1	12.6
47 Illicit drug deaths																							
Total deaths, 1993-1998	6	11	21	26	32	80	179	125	22	27	36	10	26	10	38	318	81	38	23	129	1,202		
Rate per 100,000 pop age 15-64	1.9	4.1	4.8	5.2	10.0	9.3	8.4	10.1	7.5	8.7	11.9	3.4	7.1	3.9	7.1	34.5	10.6	5.2	3.6	10.0	12.2	1.9	34.5
48 Suicide																							
Total deaths, 1994-1998	[illegible]	80	88	161	120	147	245	182	64	189	103	60	66	31	72	413	90	64	65	237	2,341		
Rate per 100,000 population	1.3	1.4	1.6	1.4	1.8	1.3	0.9	1.2	1.7	1.3	1.3	1.7	1.5	1.0	1.1	1.4	1.0	0.9	0.8	1.3	1.5	0.8	1.9

38. Active cases of tuberculosis (new active and reactivated), number and rate per 100,000 total population, 1999. Division of Tuberculosis Control, B.C. Centre for Disease Control Society. Cumulative Monthly Report, January to December 1999. http://www.bccdc.org/tbc.html

39. Number of persons testing newly positive for HIV and rate per 100,000 population, 1998. B.C. total includes 1 case of unspecified health region. STD/AIDS Control. B.C. Centre for Disease Control Society. HIV/AIDS Update: Year End 1998. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

40. New notifications of chlamydia, gonorrhea, and infectious syphilis and rate per 100,000 population, 1998. B.C. total includes 6 chlamydia cases of unspecified health region. STD/AIDS Control, B.C. Centre for Disease Control Society. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

41. Reported cases, hospitalizations, and physician office visits due to intestinal infectious diseases. For reported cases, diseases include amoebiasis, botulism, brucellosis, campylobacteriosis, cholera, cryptosporidiosis, E. coli, giardiasis, hepatitis A, listeriosis, paratyphoid, salmonellosis, shigellosis, trichinosis, typhoid, and yersiniosis. Office visits and hospitalizations are based on cases with a diagnosis of intestinal infectious diseases (ICD-9 001-009). Reported cases, 1998: Epidemiology Services, B.C. Centre for Disease Control Society. Data obtained from the Health Data Warehouse, B.C. Ministry of Health. Physician office visits, 1998: Medical Services Plan billings. Unpublished tables. Hospitalizations, 1998/99: Hospital separations, for acute and rehabilitation levels of care. PURRFECT 5.0. Information and Analysis Branch, B.C. Ministry of Health.

42. Total number of waterborne disease outbreaks reported between January 1980 and June 2000. Public Health Protection Branch, B.C. Ministry of Health.

43. Number of deaths due to unintentional injuries, children and youth (age 0-24) and all ages. Total number of deaths and average annual rate per 100,000 over the 5-year period 1994-1998. All ages rate is age-standardized. The term unintentional ("accidental") includes injuries due to causes such as motor vehicle collisions, falls, drowning, burns, and poisoning (ICD-9 E800-E949). B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

44. Hospital cases (age 65 and over) due to hip fractures and rates per 1,000 population, acute and rehabilitation levels of care. ICD-9 820.0-820.3, 820.8, 820.9. B.C. total includes 9 cases of unspecified health region. Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

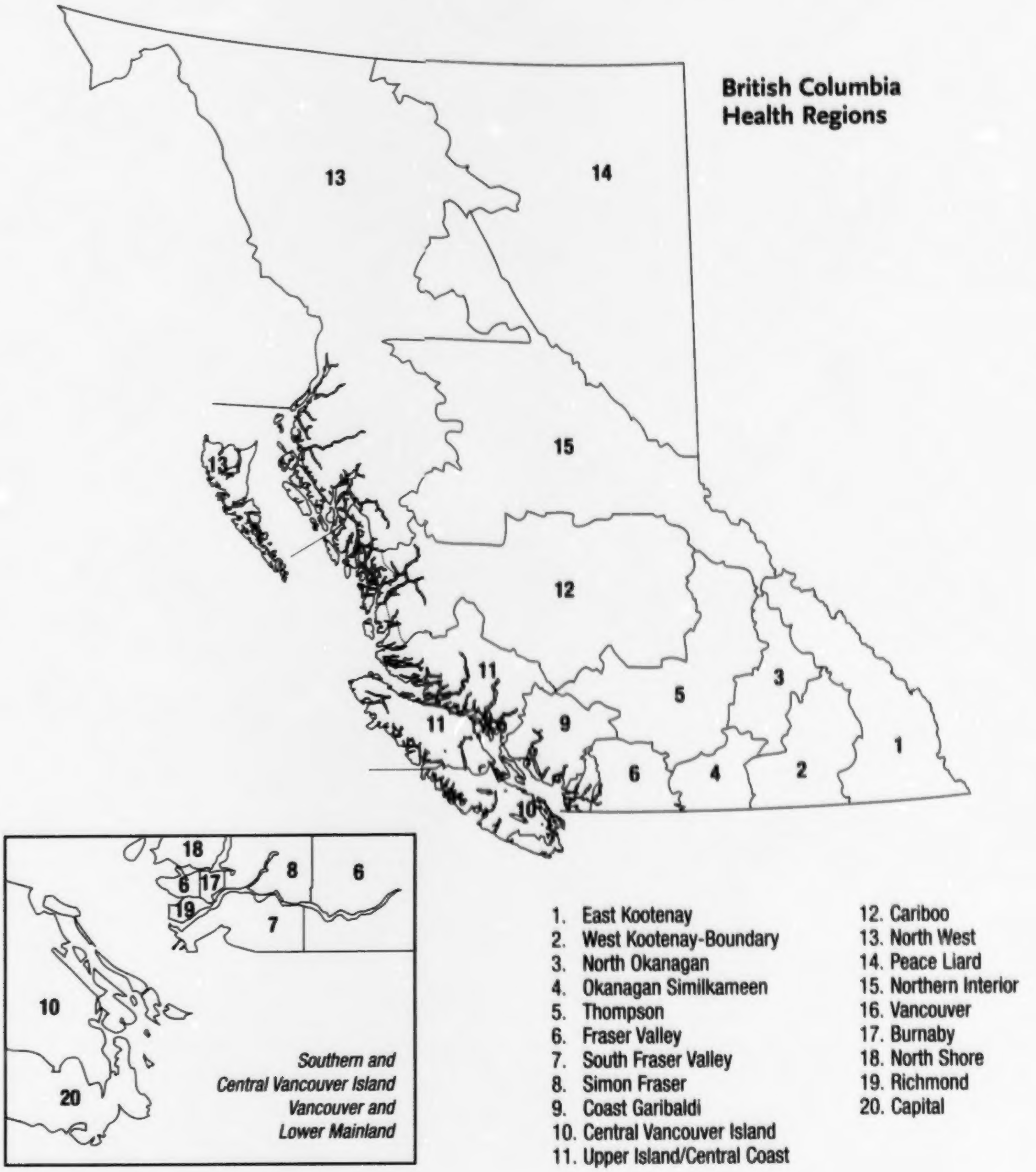
45. Spousal assaults reported to or by police, total number for the 3-year period 1996-1998 and average annual rate per 1,000 population. Police Services Division, B.C. Ministry of Attorney General and BC STATS population estimates. Obtained from the Health Data Warehouse, B.C. Ministry of Health.

46. Confirmed reports of abuse or neglect (as defined under the Child, Family, and Community Service Act), total number for the two fiscal years 1997/98 and 1998/99 and annual average rate per 1,000 population age 0-18. B.C. total includes 11 cases of unspecified health region in 1997/98. Source: B.C. Ministry for Children and Families and BC STATS population estimates.

47. Total number of illicit drug deaths and average annual rate over the six-year period 1993-1998, by region of residence of deceased. B.C. total includes 62 deaths of unspecified region. B.C. Coroners Service and BC STATS population estimates. Data obtained from the Health Data Warehouse, B.C. Ministry of Health.

48. Total number of suicides (ICD-9 E850-E859) for 5-year period 1994-1998 and age standardized mortality rate per 10,000 standard population. B.C. Vital Statistics Agency, Ministry of Health. Obtained from the Health Data Warehouse, B.C. Ministry of Health.

Appendix E


British Columbia
Health Regions
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Southern and
Central Vancouver Island
Vancouver and
Lower Mainland

1. East Kootenay
2. West Kootenay-Boundary
3. North Okanagan
4. Okanagan Similkameen
5. Thompson
6. Fraser Valley
7. South Fraser Valley
8. Simon Fraser
9. Coast Garibaldi
10. Central Vancouver Island
11. Upper Island/Central Coast
12. Cariboo
13. North West
14. Peace Liard
15. Northern Interior
16. Vancouver
17. Burnaby
18. North Shore
19. Richmond
20. Capital

Prepared by: Information and Analysis Branch, Ministry of Health and Ministry Responsible for Seniors
Boundary Source: BC STATS, Ministry of Finance and Corporate Relations

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